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CONTENTS

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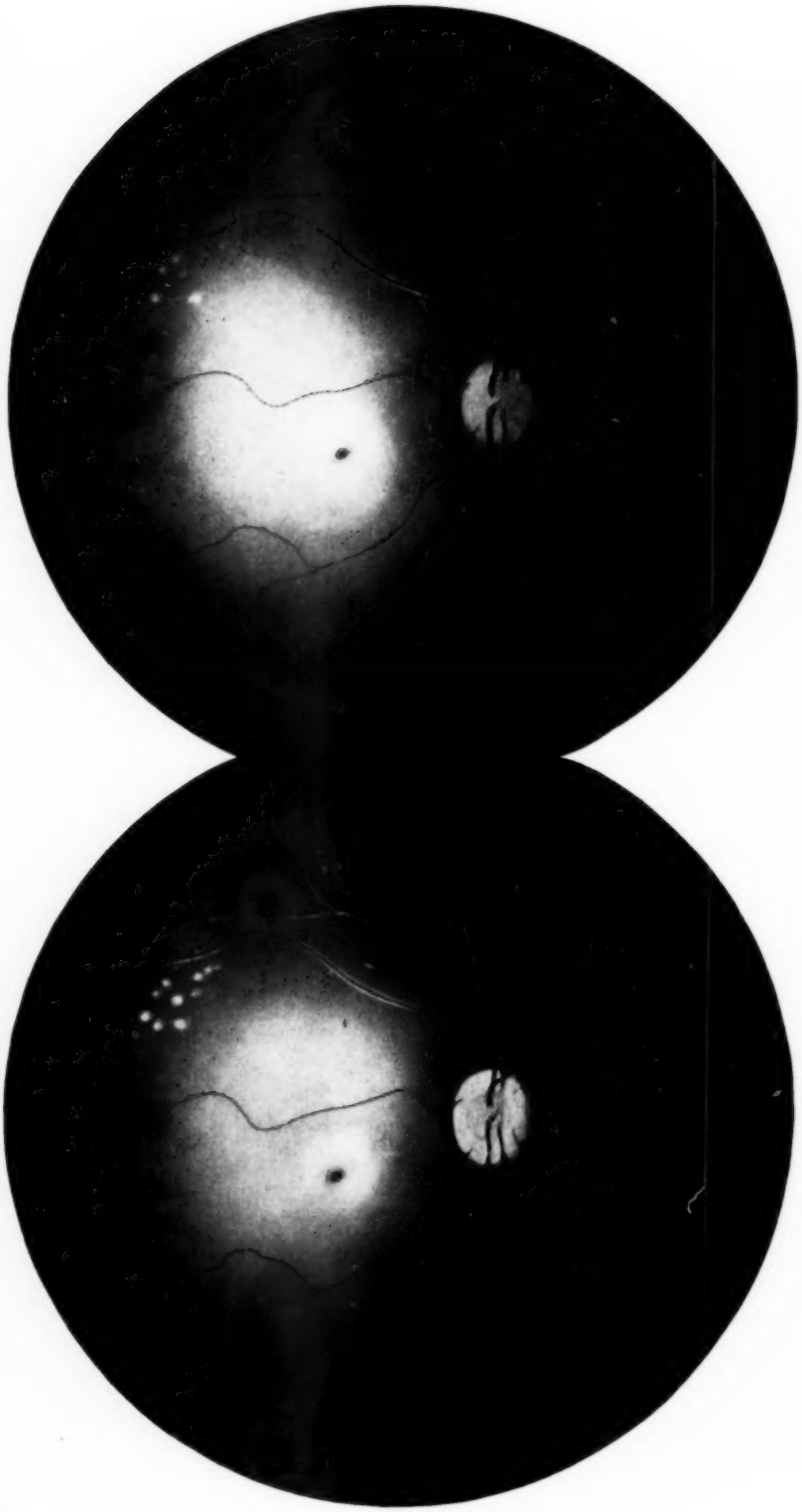

FIG. 1. SEVEN HOURS AFTER SUDDEN ONSET; SHOWING SEGMENTATION OF BLOOD COLUMN, AND COAGULATION NECROSIS IN MACULAR REGION WITH CHERRY RED SPOT.

FIG. 2. NINE DAYS AFTER ONSET.

OBSTRUCTION OF THE CENTRAL ARTERY (MACY L. LERNER).

AMERICAN JOURNAL OF OPHTHALMOLOGY

Volume 13 June, 1930 Number 6

OBSTRUCTION OF THE CENTRAL RETINAL ARTERY

Report of a case

MACY L. LERNER, M.D., M.Sc.Med.

ROCHESTER, NEW YORK

In a woman of sixty-seven years, who had general arteriosclerosis, had had several paralytic strokes, and died a little later from coronary thrombosis, sudden blindness occurred in association with the ophthalmoscopic picture of obstruction of the central artery of the retina, together with the striking appearance of fragmentation of the retinal blood stream, as illustrated in the color drawings by the author which form the frontispiece to this issue.

There is still considerable diversity of opinion as to the exact nature of obstruction of the central retinal artery. Whether it is due to an embolus, to an endarteritis often more or less complicated by spasm, or to a thrombosis is at times difficult to decide. In spite of the different views, there is a general agreement that arterial disease is present in most of these cases. However, the majority are reported as due to emboli.

This vascular accident is by no means rare, and the literature gives numerous reports. Careful studies in this country have been made by de Schweinitz and Holloway[1], Friedenwald[2], and various others. Recently Coverdale[3] reported eleven cases from the Moorfields Hospital, London. He considers endarteritis with thrombosis to be the cause in cases occurring late in life.

When we realize how helpless the ophthalmologist is in confronting a case so far as treatment is concerned in restoring vision, it seems that there is still room for deliberation and research in this important subject. The case here reported is of special interest because of the segmentation of the retinal blood stream and capillary circulation observed by the writer for a period of over ten days. Another worthy part of the study of this case is the fact that the same observer had the opportunity to examine the eyegrounds five years before the patient's present trouble.

Case report

D. L., female, aged sixty-seven years, housewife.

Family history. Father and mother died of old age, two brothers died in infancy, another brother died from pneumonia in the thirties, one sister died at forty-five years following an operation. Husband died at sixty-two years from pneumonia; two daughters and five sons are living and well.

Personal history. Patient had typhoid at twenty years, has been suffering from hypertension since 1913 and chronic nephritis since 1915. Her appetite has been good, the bowels are regular, but for the past seventeen years she has been taking daily one dram of magnesium sulphate because of her high blood pressure. In the past three years she has had swelling of the ankles. About two years ago she had a stroke, and her right arm and leg were completely paralyzed for five months, function gradually returning in the course of six months. Then she had another stroke with complete paralysis of the right arm and leg. In neither attack was she unconscious. The function of the extremities returned much more slowly after the second attack. She was able to drag her right foot with the help of a cane. Last April she was awakened by a sudden severe pain in the left flank, localizing in a small area. She was taken to a hospital for ob-

servation. No definite diagnosis was made as to the attack. For a time it was considered to be nephrolithiasis.

Physical examination at the hospital showed the following: A rather obese and helpless woman, not acutely ill and in no apparent pain. Right side of body partly paralyzed. Skin dark, of a generalized tan appearance. Her reaction time was slow but she answered questions fairly intelligently. There were no gross abnormalities in the head. All the cranial nerves seemed to function properly. The throat was clear; no adenopathy and no palpable thyroid.

Chest: Thick walled, of good expansion; no dullness. Breath sounds, vesicular diminished at right base; no râles. Heart not enlarged, sound clear, regular, and without murmurs.

Abdomen: Considerably distended but not tender, no palpable masses were felt. A definite small area of acute tenderness was present in the postaxillary line in the upper flank.

Laboratory findings: Blood count: red cells, 2940000; white cells, 6300; hemoglobin, 70 percent. Urine: color amber, turbidity moderate, reaction acid, specific gravity 1017, albumen plus 1, sugar negative, red blood cells moderate; white blood cells moderate. Blood chemistry: NPN 57, NaCl 420. Wassermann and Kahn tests negative. Gastrointestinal series all showed no pathology. X-ray of chest showed the aortic shadow definitely wider than usual.

The hospital diagnosis was as follows: 1, nephrolithiasis. 2, right hemiplegia. 3, obesity. 4, general arteriosclerosis. 5, hypertension.

A few months later, while climbing the stairs to her house after a short automobile ride, she developed acute dilatation of the heart followed by fibrillation and mitral insufficiency. Her blood pressure ranged from 180 to 200 mm.

Ocular history: The patient reported to me for the first time in May, 1925. At that time she felt fairly well. Her chief complaint was of seeing black spots in front of her eyes, and occasional headaches. She had been wearing glasses for distance and near for over ten years, one year previously had had an ocular examination by an optician, and two years before by an ophthalmologist. She wore a +2.00 D. sphere in each eye for distance, and +4.00 D. sphere for near. At that time, her visual acuity was O.D. 6/30 + 1 without glasses and 6/6 — 3 with glasses; O.S. 6/30 + 1 without glasses and 6/15 + 3 with glasses.

The external ocular structures, the muscle balance and the tactile tension were normal. Corneas were clear. Pupils were equal, regular and active to direct consensual light and to accommodation. Ocular rotations were full.

Ophthalmoscopy: The right eye had peripheral lenticular changes of the senile type. The optic disc was well outlined and of good color. The retinal veins appeared very dark and somewhat tortuous, the arteries showed considerable increase in the central light reflex. No fundus lesions were noted.

The left eye had incipient cataractous changes, about as in the right eye. The disc was of good color and well defined, and the vessels showed the same picture as in the right eye.

Corneal microscopy simply confirmed the ophthalmoscopic observation, namely, of incipient cataract in both eyes, somewhat more marked in the right eye.

Her refraction did not show substantial change. A slight increase was made in the reading correction.

Ocular diagnosis (in 1925): A moderate degree of sclerosis of the retinal vessels, incipient cataract, and hyperopia.

The patient was not seen by me during the succeeding five years, nor during her attacks of later hemiplegia and still later hospitalization.

December 10, 1929. At 4 p.m. I was called to see the patient at her home and the following history was obtained. Until 11 a.m. that day, her sight had been fairly good. She did not do much reading because of difficulty in concentrating since her last stroke, but she was certain that her sight was not impaired. About 11 a.m. her right lids

felt heavy and suddenly the sight was gone.

Upon examination, I found her to be in good mental state. Her lids appeared normal, the conjunctivas and corneas clear. The pupils were unequal, the right being larger. There was only a sluggish attempt of the right pupil to react to light.

Ophthalmoscopy: Right eye: a triangular cataractous area was noted at the periphery downward and outward. A large vitreous opacity was seen just in front of the disc, at times obscuring the nerve head. The latter was well defined but appeared pale yellow. The retinal arteries were reduced in size to mere threads, and appeared empty in some portions. The veins were also narrow and, although somewhat darker, in places it was difficult to differentiate artery from vein.

The blood stream in both arteries and veins was divided into segments like a broken column of mercury in a thermometer, portions of blood alternating with apparently empty spaces. Some of these gaps in the vessels actually appeared empty of cellular elements. The blood could be seen travelling along the arteries in a stream in one direction, while in other branches I noted an apparent current in the reverse direction. Anyone familiar with the capillary circulation as observed with the slit-lamp can realize how fascinating and remarkable the picture is when observed with the ophthalmoscope.

A few exudates, grayish-white, were noted in the temporal region of the retina, mostly around the macular area; numerous white dot-like exudates were also noted downward and outward in the periphery. Arteriovenous compression was rather pronounced. A few almost microscopic hemorrhages could be seen along the finer retinal capillary branches. Some of the vessels showed typical perivascular lines. The patient was administered amyl nitrite pearls in addition to massage of the globe; instructions were left to keep up the massage and to continue the nitrites.

Three hours later the same phenomenon of fragmentation or segmentation of the retinal blood stream with actual visible circulation was still present. The disc appeared paler and a general pallor was noted in the macular region, extending downward and outward. The upper portion of the retina as well as that along the superior temporal vessels appeared normal. The line of demarcation was rather well defined because of the tigroid character of the fundus.

Another ophthalmoscopic study was made one hour later, with the object of making a fundus drawing, and then I noted the cherry spot located about 1.5 disc diameters from the disc and particularly downward and outward along and somewhat above the inferior temporal vessels. The spot appeared at first as a rather dark violet area, with poorly defined margins, and about half the size of the disc: around this dark reddish area there was a large zone of dull gray-white edematous retina, of the kind to which the well-chosen term of "coagulation necrosis" has been applied.

Four days later: The patient had no light perception but complained of seeing red and green lasting a few seconds. At times the patient thought she could see light. Upon actual checking I learned that she did not have even light perception. The pupil did not react to light. The globe was white and tension normal, the disc appeared definitely pale yellow. The retinal vessels still showed interruption of the blood current. The blood stream could be seen with difficulty, travelling very slowly. It was observed mostly in the superior temporal vessels. The cherry red spot was much smaller, more or less outlined but fainter. A cloudy gray-white area was noted in the macular region, and extending upward to the superior temporal vessels and also downward and outward.

Ten days later: Essentially the same picture was seen, segmentation persisting in a few vessels. Circulation of the blood-stream was still present but slow. The arteries were thread-like. Irregularity of the vessel-walls was noted. Arteriovenous compression was very

marked; the cherry red spot outstanding.

The patient was not seen by me again. Two months later, she died of coronary thrombosis.

The phenomenon of segmentation or fragmentation of the retinal blood stream was observed by Edward Jaeger[5] in 1853. It occurred in a case of sudden blindness. The ophthalmoscope revealed an interrupted nonrhythmical progression of the unevenly colored blood current. The first case diagnosed and explained, however, was that recorded by Graefe[5] in his essay on embolism of the central retinal artery. In 1891 Fischer[5] was able to collect about thirty cases of embolism of the retinal artery in which the broken blood column was seen in the veins, but he only found nine in which it had been described in the arteries.

Harry Friedenwald[2] states that the most exquisite example seen by him was in a case of embolism. He also observed it in glaucoma. He speaks of Donders having observed the segmentation of the blood column in the conjunctival veins, where he saw the broken spaces filled with plasma but without blood corpuscles. (This observation was made with a microscope in sunlight.) Friedenwald observed the same peculiarity of the blood current in newly formed corneal bloodvessels, using a Hartnack hand lens to study the circulation in the capillaries in various cases of vascular keratitis.

Microscopic examination of pig eyes, as mentioned in Friedenwald's paper, has shown that the colorless vessel spaces contain no red blood corpuscles, or perhaps a few scattered ones. The red cells are collected into heaps in the colored parts; the colorless portion of the vessels is filled with blood plasma and contains also white corpuscles. The same arrangement no doubt occurs in the living vessels. "It would appear that the circulating blood in the vessels breaks up into colorless and colored parts, into parts free from red corpuscles and parts in which the latter become aggregated in masses, and that this occurs when the current is greatly retarded. . . . . There is a cohesive attraction between the red blood cells."

Fragmentation or segmentation of the retinal stream is generally regarded as a post-mortem phenomenon. Kahn[6], in 1916, considered it an absolute sign of death. In 1896 Usher[6] examined the fundus of the human eye, that of a monkey, that of a rabbit, and that of a cat, just before death, at the time of death, and after death. He noted the following stages in the production of fragmentation: (1) The blood in the vessels takes on a finely granular appearance. (2) The blood becomes coarsely granular. (3) The blood fragments or segments become beaded. Bulmer[6] compares the final stage of the segmented blood column to a chain of anthrax bacilli.

Wolff and Davies[4] tried various experiments to produce retinal edema, and finally succeeded. A cat was anesthetized, the thorax opened, and the arch of the aorta and the two vessels arising from it were exposed. While one observer examined the fundus with an ophthalmoscope, the other clamped the brachiocephalic and left subclavian arteries and the superior vena cava. The arteries in the fundus immediately became fine threads. The granular appearance of the blood and the visible streaming in the veins were noted in ten seconds. Fragmentation was noted in thirty-five seconds. The fundus became pale, and soon opaque-looking but bright reflexes were seen along the vessels. The flow in the veins was toward the disc; while in the arteries, in which the change came later than in the veins, it seemed that the flow at times was toward the disc and at other times away from it. In human cases, according to Usher[6], the flow both in arteries and in veins is always toward the disc. On releasing the clamp the arteries and veins filled again, the retina became transparent, and the reflexes disappeared. This could be repeated at will, producing and abolishing the phenomenon.

Wolff and Davies believe that the fragmentation phenomenon is due to aggregation, that is, to rouleaux forma-

tion such as occurs in shed blood. The red corpuscles are surrounded by an envelope containing lipoid substances (lecithin and cholesterol) which seem to impart greasiness to the surface and tend to make the corpuscles run together, just as two pieces of cork placed near each other on a fluid will run together. The result of this surface tension action is that the corpuscles have a strong tendency to become aggregated into rouleaux and clumps when the blood is at rest. But, if the blood be disturbed, the aggregated corpuscles are readily separated, the change being reversible, whereas coagulation is an irreversible phenomenon.

Factors that influence segmentation of the blood stream are listed by Wolff and Davies as follows:

(a) Slowing of the blood stream.
(b) Size of the vessels.
(c) Type of corpuscles.
(d) Type of serum.
(e) Type of living endothelium.
(f) Pressure on the vessels (intraocular tension).

Wolff and Davies emphasize the fact that segmentation of the retinal vessels, quite apart from that which is the result of embolism of the central artery, is not necessarily a sign of death. Respiration has been noted after fragmentation had begun, and the heart of the cat began to beat after complete disappearance of this phenomenon. "It would therefore, ... not be justifiable to cease one's effort in the resuscitation of the apparently dead because the retinal blood stream is segmented."

It is generally admitted that in obstruction of the central retinal artery three processes separately or in combination may be responsible, namely: embolism, endarteritis, thrombosis, and spasm of artery.

While there is no unanimity of opinion as to which of the processes mentioned is the important factor, there is, however, a general understanding that arterial disease is always present. In advanced life endarteritis with thrombosis is usually considered to be the cause.

In the case reported here, with its history, the ocular findings of five years earlier, the two attacks of hemiplegia in the past two years, and the recent ocular studies, together with the fact that death was due to coronary thrombosis, we are justified in regarding the cause as endarteritis and thrombosis.

332 Park avenue

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[4] Wolff, E., and Davies, F. Trans. Ophth. Soc. United Kingdom, 1928, v. 48, p. 143.
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SOME OF THE EARLY EYE AND EAR INFIRMARIES IN THE UNITED STATES, AND THE MEN WHO MADE THEM

W. H. WILMER, M.D., LL.D., Sc.D.
BALTIMORE

Beginning with Dr. Elisha North and his New London Eye Infirmary (1829), the lives of a number of interesting personalities in the early history of ophthalmology are discussed in relation to the institutions which they founded or in which they were particularly active. Address delivered at the dedication of the Florence Crane Building for Eye, Ear, and Throat, Hartford, Connecticut, January 10, 1930.

One hundred and thirteen years ago, the first institution for the treatment of diseases of the eye in the United States was established in the State of Connecticut, under the name of the "New London Eye Infirmary". It was promoted by a very remarkable man, Dr. Elisha North, who in 1829 gave himself the title of "Conductor of an Eye Infirmary". We know very little of its subsequent history save that it was still functioning twelve years after its foundation.

The inspiration for the establishment of the infirmaries that are to be described later came either from England or from the Continent. But Dr. North's inspiration was largely from within his own soul, for with the exception of the time spent in Philadelphia in the study of medicine he passed his whole life in his native state.

An interesting incident is told about him in regard to a patient with a foreign body in the eye. After removing the particle, he asked the patient what had been done previously for the eye. The patient replied: "I consulted Dr. ————, who gave me thirteen doses of calomel". As the average dose of calomel for those days varied from five to fifteen grains, we may, without stretch of imagination, fancy that this experience spurred on Dr. North to the urgent founding of the Infirmary.

He was a most notable man; but I speak of his achievements with hesitation, for there are probably many present who know much more about him than I do. In 1908 Dr. Steiner wrote a most delightful sketch of his life, which contains all that I can say and much more.

Dr. North was a man of many activities. It is reported that at the age of sixteen years he treated a patient with a broken leg very successfully. He first studied medicine with his father in Goshen, later in Hartford with Dr. Lemuel Hopkins, who was much renowned as a man of letters as well as a distinguished physician. After two

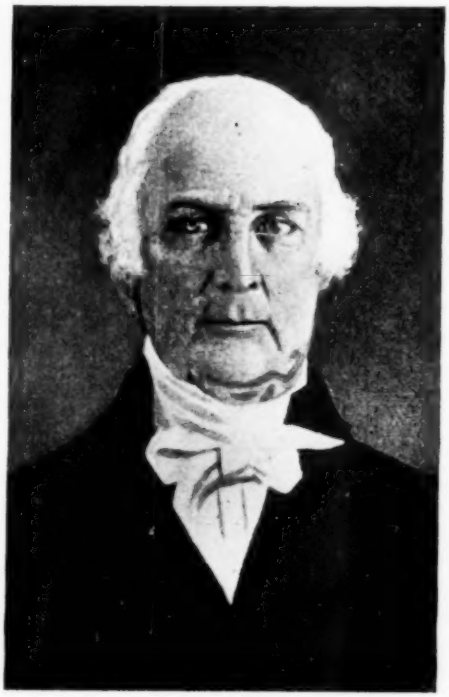


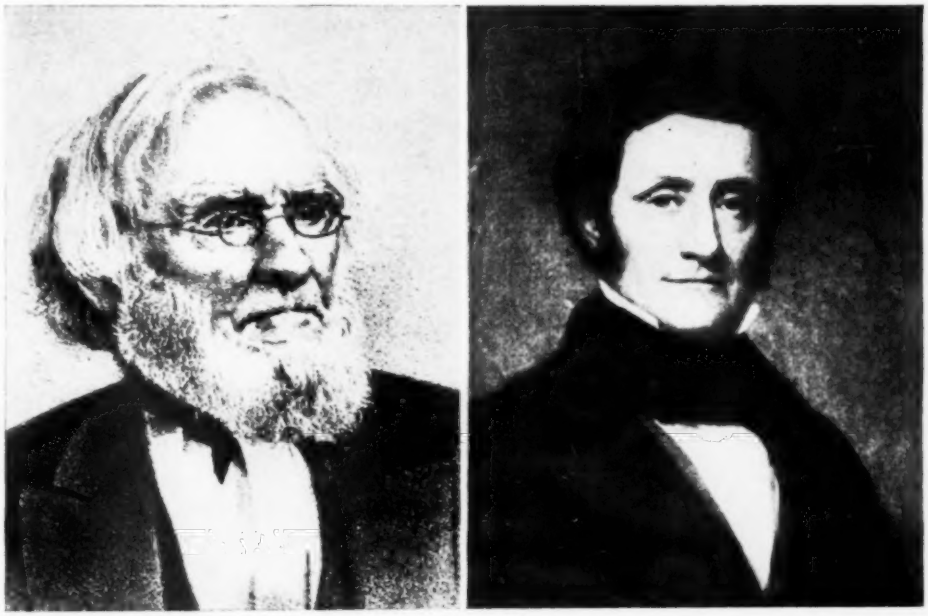
Fig. 1 (Wilmer). Elisha North, 1771-1843; founder, in 1817, of the first eye infirmary in the United States. (From "The development of ophthalmology in America, 1800-1870", by A. H. Hubbell.)

years spent in the study of medicine at the University of Pennsylvania, he practiced in Goshen until he moved to New London in 1812. In 1813, the State Medical Society of Connecticut gave him the degree of M.D. He was among the first of the physicians in America to use vaccination against smallpox, and he wrote the first book on epidemic cerebrospinal meningitis. In spite of his devotion to general medical problems, he was much interested in the affections of the eyes. In his "Outlines of the Science of Life", he states: "I have had the pleasure to prevent total blindness and restore sight to twelve of thirteen persons during the last three years. They would now probably be moping about in total blindness, and be a burden to Society and to themselves, had it not been for my individual exertions"..... "Our success or exertions probably hastened in this country the establishment of larger and better infirmaries (i.e., for larger cities)". (See figure 1, Dr. North.)

Dr. North's prophetic vision was amply fulfilled, for in 1820 the New York Eye Infirmary was established by two equally remarkable young men—Edward Delafield, twenty-six years of age, and John Kearney Rodgers, twenty-seven. (See figure 2.) This infirmary, the forerunner of the now renowned New York Eye and Ear Infirmary, had a very modest beginning in two hired rooms on the second floor of a house at 45 Chatham Square, New York. The equipment was simple; medical students, in turn, acted as apothecary, and the owner of the house filled the position of superintendent.

On April 21, 1821, a meeting was held at which were elected twenty-three prominent laymen as directors, three consulting surgeons, and two attending surgeons (Delafield and Rodgers). One of the consultants, Dr. Samuel Borrowe, was Delafield's old preceptor. On March 29, 1882, the institution was incorporated by an act of the state legislature.

In 1823, facilities for the treatment of diseases of the ear were provided; and in 1864 the official title was changed to



Dr. Edward Delafield, 1795-1875 Dr. John Kearney Rodgers, 1793-1851

Fig. 2 (Wilmer). Portraits of Delafield and Rodgers, from Hubbell's "Ophthalmology in America".

"the New York Eye and Ear Infirmary". (See figure 3.)

In 1873, there was added a department for the treatment of diseases of the throat. This, however, was abandoned in 1902 owing to the excessive number of eye and ear patients.

"Travers' Diseases of the Eye" and contributed to medical journals on ophthalmologic subjects: all of this in addition to holding the chair of obstetrics and the chair of diseases of women and children in the College of Physicians and Surgeons.

Fig. 3 (Wilmer). New York Eye and Ear Infirmary, erected 1856. (From Hubbell's "Ophthalmology in America".)

Several successive moves were made until, in 1890, the corner stone was laid for the present magnificent building "which is six stories high, covers eight ordinary city lots and is provided with the most modern apparatus for the treatment of diseases of the eye and ear".

During the first seven months of the Infirmary's existence, 436 patients were treated; in the next nine months 686 patients, and during the last year there were 56,446 new patients in the dispensary alone.

Delafield was the chief creator of the new hospital and continued as one of its visiting surgeons for thirty years. He was one of the founders of the American Ophthalmological Society, and in 1864 was elected its first president. He brought out a new edition of

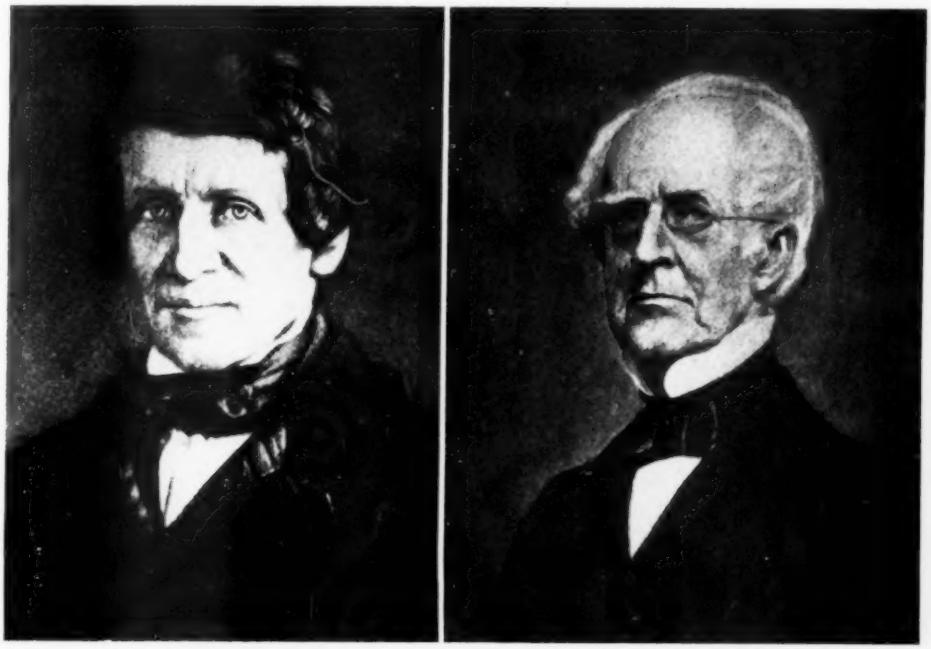
His collaborator, John Kearney Rodgers, also had a very distinguished career as anatomist and surgeon. In 1827 he was successful in wiring an ununited fracture of the humerus, and in 1845 he performed the first ligation of the left subclavian artery for aneurism. The latter operation, however, was not successful. Though not a prolific writer, he was a wise physician, a bold and successful surgeon.

In 1821 the "Institution for the Diseases of the Eye and Ear, Philadelphia", had its beginning. It was the mind child of Dr. George McClellan of that city. (See figure 4.) In 1822, a notice appeared in the "Medical Record" to the effect that the institution, which had been conducted as a dispensary, had met with so much success that it had been extended into

a hospital, with a charter from the supreme court of the state. The names of thirteen prominent citizens appeared on the list of board of managers, among them the chief justice of the state (Tilghman). During the first year, ten operations for cataract were performed. It is very interesting to note that in only two of the cases was the cataract extracted, the remaining eight being operated upon by the method of "division" or " depression". The total number of patients was fifty-one. This establishment seems to have been largely a one-man affair, and after 1824 there is no record of its activities. It is probable that McClellan's activities were transferred to the Jefferson Medical College, of which he was one of the founders in 1825.

Dr. McClellan was born in Woodstock, Connecticut, in 1796. He was said to be one of the greatest men of a distinguished group in Philadelphia.

Dr. Nathan Ryno Smith (1797-1877) graduated in medicine at Yale in 1823. (See figure 4.) He was not connected with any of the early infirmaries so far as I can ascertain; but he was a friend of Dr. McClellan and joined with him in the founding of the Jefferson Medical College, where he occupied the chair of anatomy.



Dr. George McClellan, 1796-1847 Dr. Nathan R. Smith, 1797-1887

Fig. 4 (Wilmer). Portraits of McClellan and Smith, from Hubbell's "Ophthalmology in America".

In his inaugural address he defended the view that diseases and their remedies depend upon absorption in the blood, not upon their influence on the nervous system. He was a very skilful surgeon. He was among the first to divide the tendo Achillis subcutaneously for club foot; he performed many lithotomies and he was very expert in removing the thyroid gland. He described in an interesting way his method of examining the external auditory canal by direct sunlight. While the external ear is pulled outward from the head to straighten the canal, he notes that the examination is facilitated by insertion of a grooved director with

its convex surface pressed against the anterior wall of the canal. He also invented an ingenious instrument for perforating the membrana tympani. The apparatus consisted of a trephine which cut out a small circular piece of the drum. He was the founder of the medical department of the University of Vermont and president of the Medical and Chirurgical Faculty of Maryland.

Dr. Smith was a forceful writer upon many surgical subjects, but our great interest in him lies in the fact that in 1829 he brought out the second book upon the ear in this country—a translation from the French of J. A. Saissy's "Diseases of the Internal Ear". To this he added a supplement of his own on "Diseases of the External Ear". In this connection, it is interesting to note that Dr. William Price (1788-1860), a surgeon of the Pennsylvania Hospital, brought out in 1821 the "Anatomy of the Human Ear", the American edition of Dr. John Cunningham Saunders' English work, giving us the first book on the ear published in the United States.

Dr. Joshua I. Cohen (1801-1870) was among the pioneers in American otology. He was one of the earliest—if not the first—to confine his practice to diseases of the ear. Born in Richmond, Virginia, he graduated in 1823 at the University of Maryland and spent the remainder of his life in Baltimore. He was an intimate friend of Dr. George Frick and resembled him in his broad general culture. According to Friedenwald, in 1840 Cohen and his friend Dr. Samuel Chew established an institute for the eye and ear in Baltimore. His only written contribution to otology extant is "Postmortem appearances in case of deafness", published in 1842.

In 1821, shortly after the organization of Dr. McClellan's dispensary, the fourth institution of the kind in the United States was established under the title of the "Pennsylvania Infirmary for Diseases of the Eye and Ear". According to Oliver, a meeting was held on February 8, 1822, for the purpose of providing treatment for the poor, suffering from diseases of the eye and ear. The constitution was formed and the board of governors was selected, consisting of eight prominent laymen and one medical man. The consulting surgeons elected were Dr. Philip S. Physick and Dr. William Gibson. The staff of attending surgeons was composed of Drs. George B. Wood, Isaac Hays, John Bell, and Robert E. Griffith—veritable giants in those days.

A committee was formed "with authority to procure a room for an infirmary, and to make arrangements for carrying out the object of the institution". Shortly afterward, the committee recommended a second story room at 4 South Seventh Street, at the cost of one hundred dollars a year. Provision was made in the constitution "that clinical instruction may be given under such regulations as shall be provided by the by-laws". The Infirmary was not incorporated until 1826, and after three or four years all records of its existence disappear. Oliver says that it may have existed until the Wills Eye Hospital was opened in 1834. Of the consultants and attending staff, Dr. Isaac Hays (1796-1879) was the only one who confined his practice strictly to diseases of the eye. (See figure 5.)

At the time of the founding of the Infirmary, Dr. Hays was only twenty-six years of age. This remarkable man not only won fame as an ophthalmologist, but he also established and edited several medical journals. In 1834 he became one of the attending surgeons to the Wills Hospital, which position he held for twenty years. He was president of many scientific societies, the first president of the Ophthalmological Society of Philadelphia, and an honorary member of the American Ophthalmological Society. He reported the first case of astigmatism in this country. In addition to his scientific attainments, he was a man of great general culture and warmth of heart. He was much beloved. His graduating essay at the University of Pennsylvania, in 1820, was a key to his own

lovable character; it was entitled "Sympathy".

Another of the attending surgeons was Dr. George B. Wood, twenty-five years of age—a man of very uncommon parts. He taught chemistry at the Philadelphia School of Pharmacy. At the University of Pennsylvania he was professor of materia medica and professor of the theory and practice of

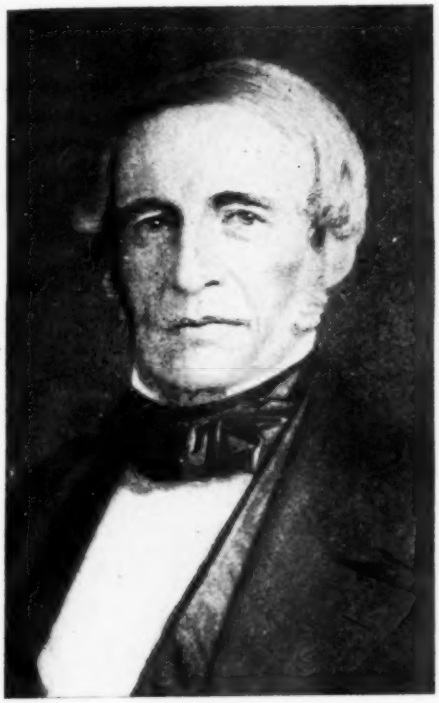


Fig. 5 (Wilmer). Dr. Isaac Hays, 1796-1879. (From Hubbell's "Ophthalmology in America".)

medicine. He was president of the American Medical Association, and was president of the College of Physicians of Philadelphia for thirty-five years. A man of great dignity, he was a profound student and a voluminous writer upon many subjects.

Dr. John Bell, twenty-six years of age, another colleague of Dr. Hays, devoted most of his practice to surgery, but he wrote extensively upon a number of subjects, which ranged from baths and mineral waters to the editing of a treatise on diseases of children.

The remaining member of the staff, Dr. Robert E. Griffith, was only twenty-four years of age at the time of his appointment. His interest in scientific subjects was very catholic, embracing as it did clinical medicine, botany, and the study of shells. His teaching varied in subjects and place: successively, he taught pharmacology at the Philadelphia College of Pharmacy; materia medica, therapeutics, hygiene, and medical jurisprudence in the University of Maryland; practice of medicine, obstetrics, and medical jurisprudence at the University of Virginia. In 1839, owing to ill health he returned to his native city, Philadelphia, where he died eleven years later.

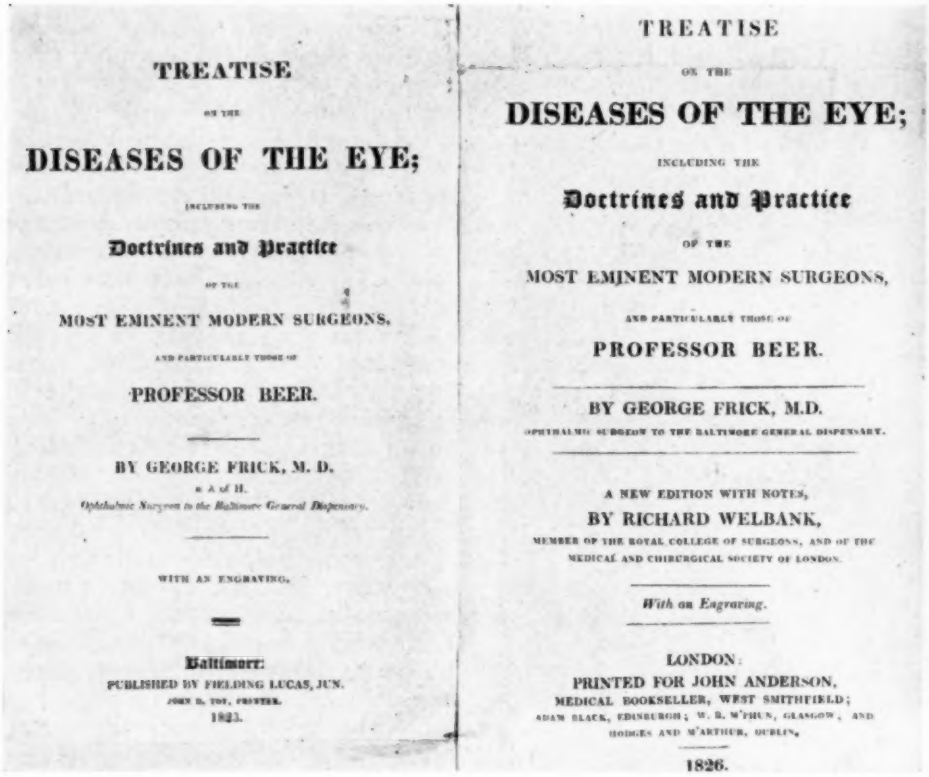
It is interesting to note the type of the two consultants to whom diseases of the eye were only one phase of medical practice.

William Gibson, thirty-four years of age, has been described as "scientist, scholar, artist, musician, traveller", and well he deserves this eulogy. Born in Baltimore in 1788, he occupied at the age of twenty-three years the chair of surgery at the University of Maryland. He was the first surgeon to attempt the ligation of the common iliac artery for aneurism, but the operation was not successful. In 1819, he operated upon cataract by passing a thread, as a seton, through the lens. An ordinary sewing-needle was used and it was inserted into the eye two lines outside of the corneal margin, as in couching, and through the lens and out on the other side of the cornea at a similar position. In 1841, he operated for strabismus by division of the muscle, but he gave this up owing to the severe criticism of the method by Dr. Physick. In 1808, he participated in the Peninsular War against the French, and in 1809 he was present at the battle of Corunna in which his friend, Sir John Moore, was killed. Five years later he extracted a bullet from General Winfield Scott, who was wounded at the battle of Chippewa during the war with England, and in 1815 he was present at the battle of Waterloo. From this record it will be seen how impossible it is to

give briefly any adequate idea of this remarkable man. At the age of sixty-seven years he retired from the chair of surgery which he had held at the University of Pennsylvania for thirty-six years.

Of the other consultant, Philip S. Physick, much has been written, but even that is an incentive to find out more about this brilliant, peculiar, fascinating soul who has been called the "Father of American Surgery". Unlike his other associates at the Infirmary, he had reached the more mature age of fifty-four years when this institution was founded. In view of his many and great achievements it is interesting to note that he entered upon the study of medicine with much reluctance. In 1789, he became house surgeon in St. George's Hospital, London, where he came into close contact with John Hunter. Later, he was elected a member of the Royal College of Surgeons, and was offered a partnership by Hunter.

Dr. Physick was a great believer in bleeding, and the following anecdote is interesting in showing his belief in blood letting as an important therapeutic measure in diseases of the eye. According to Dr. Charles Meigs, one of the latter's patients consulted Dr. Physick. "She had a violent attack of conjunctivitis; great pain and threatened destruction of the eye. She was duly bled, today, tomorrow, the next, and next morning, and so on until at last she fainted so badly that terror laid hold upon us both and we fled for succor to Dr. Physick. He came the next day at ten o'clock, looked at the eye and asked, 'Who is your bleeder? Send for him and tell him to take twelve



TREATISE

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Doctrines and Practice

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BY GEORGE FRICK, M. D.

Ophthalmic Surgeon to the Baltimore General Dispensary.

WITH AN ENGRAVING.

Baltimore:

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MEMBER OF THE ROYAL COLLEGE OF SURGEONS, AND OF THE MEDICAL AND CHIRURGICAL SOCIETY OF LONDON.

With an Engraving.

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ADAM BLACK, EDINBURGH; W. R. M'PHUN, GLASGOW; AND HODGES AND M'ARTHUR, DUBLIN.

1826.

Fig. 6 (Wilmer). Title pages of two editions of George Frick's "Treatise on the diseases of the eye," 1823 and 1826.

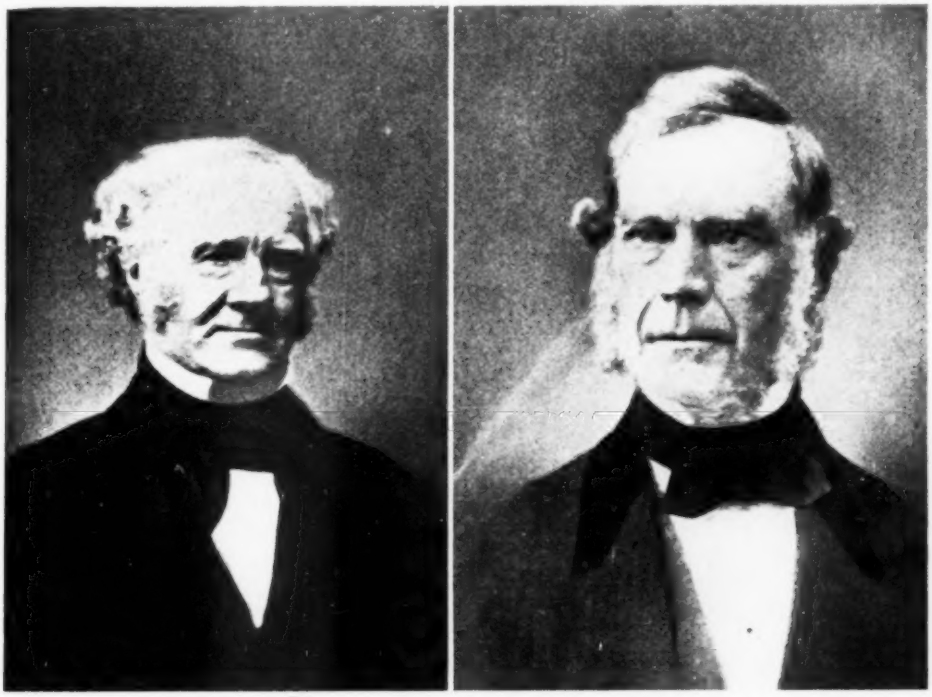
ounces of blood from the arm and request him to meet you in the morning and repeat the operation if necessary.' Although I was horrified I complied with the request and the next day looking into the eye could discover only the faintest trace of inflammation. In fact, the woman was virtually cured". He was a great surgeon. One of the last operations he performed was upon the first Chief Justice of the United States, John Marshall. It is said that in this operation nearly a thousand calculi were successfully removed.

It seems probable that the fifth institution to give special facilities for the treatment of eye affections was the "Baltimore Dispensary", which received patients in 1823, one of its four wards being reserved for eye patients. It is interesting to note, also, that provision was made for giving clinical instruction in ophthalmology. The service was certainly organized at that time, as is shown by the reproduction from the title page of Dr. Frick's book. (See figure 6.)

In 1819, after several years study of the eye in Europe, especially under Beer in Vienna, Dr. Frick returned to Baltimore. Four years later, at the age of thirty, he was the surgeon in charge of the eye wards.

He was a great student and a remarkable man in every way. According to Friedenwald, he was the first person in America to limit his work to ophthalmology. He was the first American author to publish a book on ophthalmology in this country. This book is well written and many chapters state truths that hold good today. It was of sufficient value to be republished, as an English edition, in 1826. (See figure 6.) While Dr. Frick lived until 1870, he had retired from practice in 1840 on account of deafness.

The Massachusetts Charitable Eye and Ear Infirmary was organized in 1824 through the vision and construc-



Dr. Edward Reynolds, 1793-1881 Dr. John Jeffries, 1796-1879

Fig. 7 (Wilmer). Portraits of Reynolds and Jeffries (from Hubbell's "Ophthalmology in America".)

tive enterprise of two brilliant young physicians, Dr. Edward Reynolds and Dr. John Jeffries. (See figure 7.) This now famous institution, like those preceding, had a very small beginning in one room. In the first sixteen months of its existence 886 persons applied for treatment. During 1928 there was a total of 44,431 patients treated for diseases of the eye, ear, nose, and throat.

Fig. 8 (Wilmer). Massachusetts Charitable Eye and Ear Infirmary, erected 1850. (From Hubbell's "Ophthalmology in America".)

It is said that the successful operation for cataract by Dr. Reynolds upon his father's eye had not a little to do with the successful launching of this splendid and enduring enterprise. In 1826, it was regularly organized under the title of the Boston Eye Infirmary, with a board of managers of thirteen. In 1827, it was duly incorporated under the name of the "Massachusetts Charitable Eye and Ear Infirmary". For nine years it was conducted as a dispensary, until the remodelled Gore House on Green Street was opened as a hospital and dispensary. The work rapidly increased, until in 1848, it was necessary to erect a new building on Charles Street, the present site of this justly famous hospital. (See figure 8.) Since that date it has been an important factor in the development of ophthalmology in this country.

One of the founders of this institution, Dr. Edward Reynolds, was thirty-one years of age at the time of the inauguration of this splendid undertaking. He remained attending surgeon for forty-six years. A graduate in arts at Harvard in 1811, he studied several years with Dr. John Collins Warren, and received the honorary degree of M.D. from Brown and Bowdoin in 1825. For three years, he studied ophthalmology and surgery in London and Paris. According to Hubbell, after his return to Boston he performed very successfully, at one sitting, an operation for cataract on both eyes of his father. He used the method of "depression". In 1910, his grandson gave a most interesting report—as shown by the following extract—of Dr. Reynolds' own description of this operation: "No operation for cataract had been performed in America, and certainly none in this locality. . . . . I went into my closet and offered a prayer to Deity

for success, took a glass of sherry, and went ahead to do my best".

Dr. Reynolds practiced surgery, but he had a particular liking for ophthalmology. He was one of the founders of the Tremont Medical School and the professor of surgery there. In 1864, he was elected an honorary member of the American Ophthalmological Society.

Dr. John Jeffries, three years younger than his colleagues, was also a distinguished practitioner of general medicine as well as of ophthalmology. He obtained his degree in arts from Harvard College, in 1815, and four years later he took his M.D. from the same institution. After the founding of the Massachusetts Charitable Eye and Ear Infirmary, he continued as one of its attending surgeons until 1841. He was a lovable man and a great physician.

The last of the earlier eye and ear institutions in this country that time allows me to mention is the Wills Eye Hospital of Philadelphia, which was opened for the treatment of patients on March 3, 1834, two years after it was founded. At first it was called the "Wills Hospital for the Blind and Lame". (See figure 9.) The relative number of eye cases applying for treatment steadily increased until, in 1837, practically only eye cases applied. At first only twenty patients could be cared for at one time, and the attending staff visited the hospital only twice a week. Two months after the opening of the hospital, two cases of cataract were operated upon by the method of couching. These cases caused a great deal of interest among the attending staff and visitors. The Wills Eye Hospital holds a high place in the ophthalmic hall of fame; its work has grown from 49 patients the first year to 21,021 in 1928. Writing in 1908, Hubbell said: "The present building is most suitably arranged for the proper treatment of diseases of the eye, and has all the modern improvements and facilities". But even now plans are on foot for a bigger and better hospital.

In 1834, there were four attending surgeons. One of them, Dr. Isaac Paris, was only twenty-three years of age when appointed a member of the

Fig. 9 (Wilmer). Old Wills Eye Hospital, Philadelphia, erected 1832. (From Hubbell's "Ophthalmology in America".)

staff upon which he served for eighteen years. In addition to his interest in eye affections, he was a general practitioner. In fact his best known writing is his "Remarks on spinal irritation as connected with nervous diseases". Unfortunately, his valuable life ended at the age of forty-two years.

Another of the staff was Squier Littell, thirty-one years of age when appointed attending surgeon, a position which he filled for thirty years. (See figure 10.) He was a remarkable man and may be called one of our fathers of ophthalmology. Dr. Burton Chance has written a charming biographical sketch of this eminent practitioner of medicine and ophthalmology. In 1837, Dr. Littell published a "Manual of diseases of the eye", one of the earliest books in America upon this subject. In 1846, a second edition was published. Both editions were so highly thought of in England that an edition was brought out in that country. It is a sad reflection that he, who had done so much for ophthalmology, should himself before his death, at eighty-three years of age, suffer impairment of sight from chorioretinitis.

Fig. 10 (Wilmer). Dr. Squier Littell, 1803-1886. (From Hubbell's "Ophthalmology in America".)

Dr. Isaac Hays has already been mentioned as being at one time a member of the staff of the Pennsylvania Infirmary.

George Fox, a noted surgeon, was the fourth member of the staff of Wills Hospital. In addition to his ophthalmological work, he invented a very useful apparatus for the treatment of fractured clavicle; and he was a very prominent member of the Philadelphia College of Physicians.

I am very sorry that in this brief and imperfect sketch of the beginnings of ophthalmology and otology in this country time will not allow me to speak of some later institutions which have been most influential in the development of these specialties and which occupy high places in the medical hall of fame. Among these are the Ophthalmic and Aural Institute founded by Herman Knapp, in 1860; the Brooklyn Eye and Ear Hospital, founded by a distinguished group in 1868; and the Manhattan Eye and Ear Hospital, founded by C. R. Agnew in 1869.

The first eye infirmary of Connecticut, and of America, has long since vanished "in the chinks that time has made"; but the seed planted by Elisha North in New London has increased a hundredfold. Now every city of importance in the country has its hospital for treatment of diseases of the eye and ear, or at least it has the facilities for the care of these special affections. Such institutions play an important part in the relief of suffering, the preservation of sight and hearing, and the development of the art and science of these special branches.

As Simon Flexner says: "the place to study disease is in the patient", and he might have added, with truth, that such study reaches its highest effectiveness in the hospital. This is particularly true of special institutions closely connected with a general hospital. Such an alliance binds the several

specialties to general medicine, and prevents a narrowing viewpoint of the eye, ear, or throat as an isolated organ: it promotes team work and affords the best opportunity for a thorough study of the patient's condition from every angle.

In 1823, Dr. Frick expressed this thought, in regard to the eye, very forcibly in the introduction to his book, when he wrote: "The eye may be said to resemble a microcosm, in which may be discovered all the various morbid changes which take place throughout the other organs and tissues of the body"—and that was written one hundred and seven years ago!

In the hospital, the careful clinical observations and the laboratory findings can be correlated, and the remedies, medical or surgical, quickly applied. (But may I say, parenthetically, to some of my younger colleagues that the day will never come when the test tube alone will supply the key to the diagnosis and treatment, and that our responsibility and pleasure do not end with that; but that the real goal is alleviation of suffering and to aid nature in producing a cure.) In the hospital, the resident staff can obtain the best experience and preparation for after years of useful and successful practice. Above all things the modern hospital meets the great economic and human problem of the day—to bring to the people the results of research and the hard-earned knowledge and experience of the attending staff.

There is a vast difference between Connecticut's first eye infirmary, with its record of twelve or thirteen patients successfully treated within three years, and the beautiful and well equipped hospital that we dedicate today. However, there is one thing that I hope will be shared with our ophthalmological father of old, Elisha North; that is, the flame that burned in his soul to advance special knowledge and to help his fellow man. Without that spirit, beautiful buildings or fine equipment cannot attain their highest usefulness.

The biographies of these pioneers in medicine, of early 1800, are most instructive, and show that they were men of affairs, acquainted with history, keen observers; interested in all phases of medicine and frequently possessed of a broad, strong, personal culture. Their lives and their work illustrate that very wise saying of Letemendi that "A physician who knows only medicine does not know medicine". These medical fathers of old recognized this need and they longed for hospitals for the better care of the patient and the development of the knowledge of medicine.

In these informal remarks, but little has been said concerning the part played by otology and laryngology. This is due entirely to the fact that these specialties experienced their renaissance somewhat later than the date of the founding of the infirmaries that have just been described. The same is true of the old world; for in 1840 Lincke regretted that in Germany no clinics for the treatment of aural diseases had been organized. Reiners and others failed in this attempt in Munich, as Lincke had done in Leipzig and Cooper and Saunders in London.* However, splendid facilities are now afforded in this country and abroad for clinical work in otology and laryngology, and in many medical centers extensive work is being done upon the etiology of deafness.

Devoted to the cause of humanity as the medical profession has always been, the great growth of hospitals could not have attained its present proportions without the aid and the encouragement of far-seeing laymen who have given freely of their time and their money. All honor to them! This splendid building is an expression in enduring materials of the inspiration that came to Mr. and Mrs. Richard T. Crane, Jr., to create a lasting testimonial to the outstanding skill and devotion of two eminent otologists, to the other members of the staff of the Hartford Hospital, and to Dr. Sexton, whose gen-

* The London Dispensary for Curing Diseases of the Eye and Ear was opened on March 25, 1804; but in 1807 the title of the charity was changed and the treatment was restricted to diseases of the eye.

ius pervades the whole undertaking.

All who are interested in the development of medicine and the mitigation of human suffering owe a great debt of gratitude to the wise and generous couple who have made this splendid hospital possible. It is a beautiful thought that, from their appreciation of what medicine and surgery have done for a beloved member of their family, this newest of the special hospitals has been created. They have builded "a monument more enduring than bronze".

I congratulate the city of Hartford, my colleagues, the Board of Directors of the hospital, and Mr. and Mrs. Crane upon this splendid development of their ideas. I wish for the "Florence Crane Building" every success—that it may be a great factor in furthering our knowledge of diseases of the eye, ear, and throat, a great boon to sufferers from diseases of these organs, and an enduring source of pleasure to Mr. and Mrs. Crane and the members of their family.

Wilmer Ophthalmological Institute of the John Hopkins University and Hospital.

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SOME ORIGINAL EXPERIMENTS WITH THE O'CONNOR MUSCLE-SHORTENING OPERATION

JOSEPH L. MCCOOL, M.D., F.A.C.S.
SAN FRANCISCO

The results obtained with the O'Connor muscle-shortening operation have been carefully studied as to amount of shortening obtainable, as affected by the kind of suture material and the width of lateral strip. Read before the American Academy of Ophthalmology and Otolaryngology, October 21 to 25, 1929.

In 1916 Roderic O'Connor of Oakland presented a paper before the Section on Ophthalmology of the American Medical Association on "A new shortening technique, with report of forty-two operations". Ten years later, in a paper presented before the American Academy of Ophthalmology and Otolaryngology, the same author reported the results of thirty-three shortenings of the vertical recti for the correction of hyperphoria, using a technique the same in principle but modified and improved—the outcome of ten years' work with the operation.

Personal friendship, together with a common interest in ocular muscle problems, led me to try the operation shortly after O'Connor's original paper was published, and for the past twelve years I have been using it to the exclusion of all other methods. I am convinced that from the standpoints of efficiency, safety, certainty of action and the surgical principles upon which it is based, no operation yet devised can compare with it.

Some time ago I determined to make measurements to see if there were any more or less constant factors which could be established in order to secure uniform results.

Thirty-eight muscles were shortened and measurements were made at the time of operating. Out of this number six external recti muscles were shortened on eyes of old people who had come to operation for the purpose of having their eyes enucleated for various reasons and upon whom implantation was not considered. I might say in passing that the slight sinking in of the orbital tissue as the result of section of the externi was scarcely noticeable and was certainly not objectionable to the patient.

An examination of the wet specimens should convince the most skeptical that this operation is capable of as much shortening as it is ever desirable or safe to make.

The operations which increase the influence of a muscle or muscles of the eyeball, are tendon tucking, resection, and advancement. The O'Connor operation is not an advancement, but a shortening. The new attachment is no farther forward than the original insertion of the tendon. Its effect, therefore, is analogous to that of a resection or a tendinomuscular tucking. Unlike a resection, however, the tendon is never completely severed from its original insertion, and thus are avoided two very undesirable features of any resection or advancement, namely, torsion from poorly placed sutures or from slipping of the sutures, with attendant increase in the original deformity. Furthermore, the operation is capable of very definitely graduated effect, to a degree possesed by no other operation with which I am familiar.

The proponents of tendon tucking claim for this operation freedom from torsion and from the danger of increasing the original deformity which occurs if the sutures slip. However, in any tucking operation there is one serious defect which I believe is responsible for many failures, and that is slipping of the sutures either from failure to tie them tight enough at the time of the operation, or subsequently as the result of sloughing.

In my opinion the greatest defect in any tucking operation is the necessity for tying the sutures in the tuck tight enough to maintain the calculated amount of shortening. This very constricting effect of the sutures invites sloughing, with subsequent slipping. If

one side only slips there will undoubtedly be torsion with an accompanying reduction of the lateral or vertical effect desired.

Furthermore, the normal tone of the muscles at rest and the more or less involuntary contraction under innervational impulses, coupled with the pull of the opponent muscle, tend to exert an undesirable tension on the sutures.

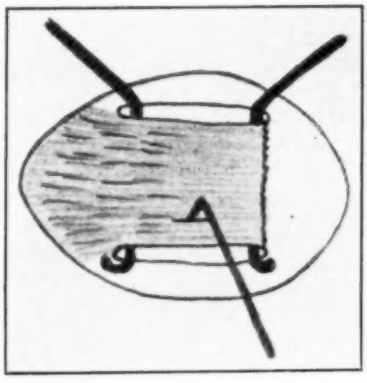

Fig. 1 (McCool). Tendon raised on hooks, small sharp hook is inserted into the tendon preparatory to separating the lateral strips from the remainder of the tendon.

So far as advancements are concerned, I have never believed that they were anything more than reenforced resections.

I am well aware of the fact that Worth, in three cases which came for reoperation, was able to pass a hook between the advanced tendon and the underlying sclera, beyond the original insertion of the tendon and up to the new point of attachment. Nevertheless, I cannot convince myself that the advanced tendon and muscle do not become firmly attached to the sclera back to the original insertion of the tendon. If it were possible to operate in such a way as to leave undisturbed the reflection of the internal capsule surrounding the tendon after it pierces the external capsule, and to keep intact the serous bursa surrounding it, it might also be possible to prevent the attachment of the under surface of the tendon to the sclera. But certainly this is very difficult to do.

The technique of the O'Connor operation for muscle shortening was described fully by the author in the original paper above referred to. Nevertheless, in order to bring out the points which I wish to emphasize in this communication, I shall refer to the salient features of the operation.

After the tendon is isolated, freed from capsular attachments, and raised on a right angle hook, a small hook is inserted between the fibers of the tendon near its edge and is passed back and forth between the tendinous insertion and the muscle fibers. (Figure 1.) The width of this isolated strip of tendon will vary between two and three millimeters, depending upon the effect desired. This maneuver is repeated on the other edge of the tendon. (Figure 2.)

The central portion of the tendon which remains after excluding the two lateral strips is cut off fairly close to the insertion, leaving about a two-millimeter stump. This central tongue may be held out of the way temporarily either by a suture knotted around it, or by an advancement forceps. The former is preferable. (Figure 3.) One lateral strip is then held lightly on a small hook and a clove hitch is thrown around it. The material used for this purpose is either fine or medium dermal (B. and B.) which has previously been threaded through a blunt needle to facilitate the making of the knot.

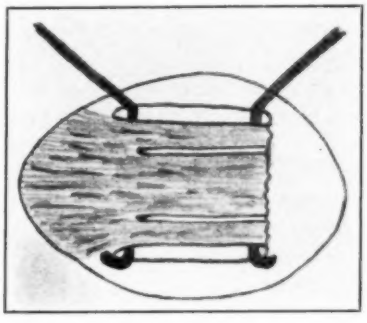

Fig. 2 (McCool). Lateral strips are separated from the remainder of the tendon.

By making traction on the strands of dermal suture at right angles to the

long axis of the lateral tendon strips, the clove hitch is transferred from the sutures to the tendon. In the same way another clove hitch is thrown around the other lateral strip of tendon

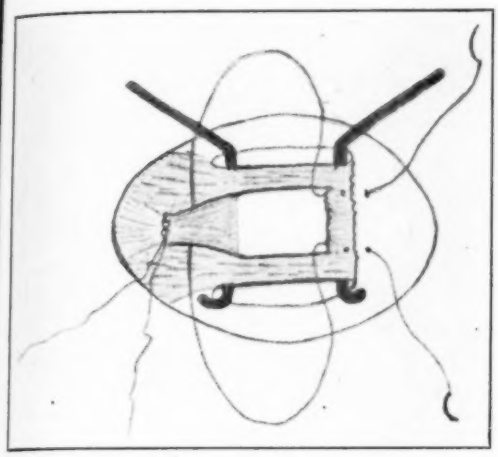

Fig. 3 (McCool). Central tongue has been cut at a point about 2 mm. from the tendon insertion, and held back by suture temporarily knotted around it. At this time the fine silk or 000 catgut suture is placed. After the lateral strips are shortened with the dermal sutures, the central tongue is tied down by its suture.

and is transferred (Figures 4 and 5.) This leaves a loop of dermal suture between the two lateral strips. Through this loop the central tongue is brought

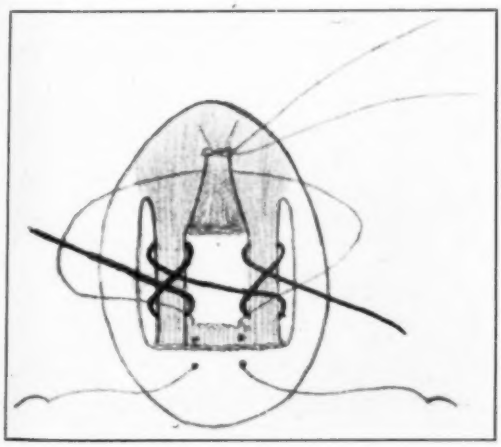

Fig. 4 (McCool). Two clove hitches of many strands of fine or medium dermal suture are wound around the two lateral strips of tendon. They are shown here as single strands to simplify the illustration.

forward toward the corneal limbus and is tied down to the original insertion of the tendon. This may be done with 000 catgut, buried beneath the capsule and conjunctiva, or number three twisted white silk may be used instead. In the event that silk is used (I am convinced that this is the better material for there is less reaction following its use than with catgut) the ends may be brought through the capsule and conjunctiva and tied external to the latter. If the approach to the tendon is through the meridional incision this suture will aid in coapting the wound.

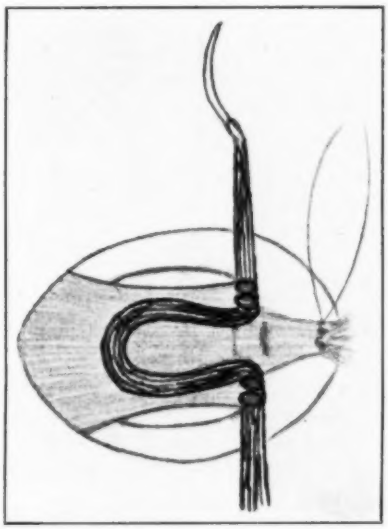

Fig. 5 (McCool). After the two clove hitches have been transferred from the dermal sutures to the lateral strips of tendon, and before they have been drawn taut, there is a loop through which the central tongue is passed and tied down lightly to the original insertion of the tendon by the suture which has already been placed.

After the central tongue has been brought forward and tied down, traction on one end of the dermal suture will cause the central loop to disappear and this will help to bind the central tongue down to the underlying stump. (Figure 6.) One end of the dermal sutures is then cut off about three or four millimeters from the knot in one lateral strip, and is tucked beneath the capsule. The other end is brought through a small button-hole in the over-

TABLE 1

OPERATIVE CASES

Material used for shortening	Width of lateral strips	No. of strands of sutures	Amt. of shortening in mm.	Average shortening in mm.	Shortening per strand
Fine dermal	2 mm.	16 16	10 9	9.5 mm.	0.59 mm.
	2.25 mm.	16 16	9 9	9	0.56 mm.
		18 18 18 18	10 10 10 11	10.25	0.57 mm.
	2.5 mm.	12	6	6	0.5 mm.
		14	8	8	0.57 mm.
		16 16 16 16 96 16 16	9 9 9 9 9 9 7	8.7	0.54 mm.
		18 18 18	10 11 11	10.3	0.57 mm.
		20	11	11	0.55 mm.
	3 mm.	14	11	11	0.78 mm.
		16 16 16	9 11 10	10	0.62
		18 18 18	10 11 11	10.6	0.59 mm.
Medium dermal	2 mm.	8 8	8 8	8	1 mm.
	2.5 mm.	12	11	11	0.91 mm.
	3 mm.	12	11	11	0.91 mm.

TABLE 2

PATHOLOGICAL SPECIMENS

Material used	Width of lateral strips	No. of strands	Amt. of shortening	Shortening per strand
Medium dermal	2.5 mm.	6 8 10 12	7 mm. 10 mm. 10 mm. 12 mm.	1.1 mm. 1.2 mm. 1 mm. 1 mm.
Fine dermal	2.5 mm.	12 16	7 mm. 10 mm.	0.58 mm. 0.62 mm.

lying capsule and conjunctiva. This free end should be cut off not less than two centimeters from the opening in the conjunctiva.

The capsule and conjunctiva are then brought together with interrupted black silk sutures. Both eyes are bandaged for twenty-four hours. After this the bandage is removed from the unoperated eye.

In the entire operation no constricting sutures have been used nor are there any sutures under tension. The

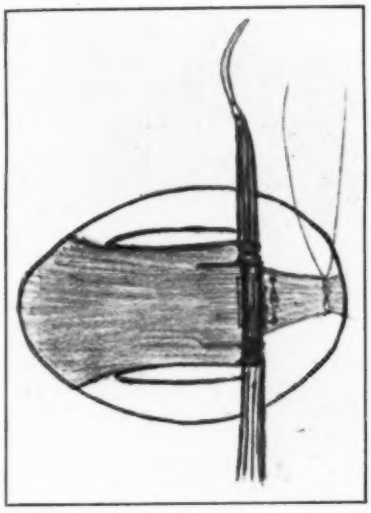

Fig. 6 (McCool). By drawing on one end of the strand of dermal suture the loop is made to disappear and then lies in a straight line, helping to hold the central tongue in place.

single suture used in tying down the central tongue is neither tied tight enough to cause constriction of tissue, nor is it under tension, for this has all been neutralized by the shortened lateral strip. The amount of shortening is, therefore, directly dependent upon the width of the lateral strips of tendon, the number of strands of dermal suture used, and their caliber.

These factors were used in the measurements that I have made and tabulated and from which my conclusions are drawn. I wish to make it perfectly clear, however, that no attempt has been made to translate millimeters of shortening into arc degrees of effect.

So many factors other than the purely mechanical ones enter into this phase of the subject that it is extremely difficult, if not impossible, to say with any degree of certainty that so many millimeters of shortening will correct so many degrees of deviation. At best the estimate is but an approximation.

The experiments which I have made have given definite data and can be repeated by anyone. I believe that they give much more accurate information as to how much a muscle may be shortened than we could get from any resection, advancement, or tucking operation.

Summary

When lateral strips of tendon measuring from 2 to 2.5 mm. in width are shortened with fine dermal suture, each strand will effect a shortening of 0.55 mm. With medium dermal suture, the shortening per strand is 1 mm. When lateral strips of tendon measuring 3 mm. in width are shortened with fine dermal suture, each strand will effect a shortening of 0.66 mm. With medium dermal suture the shortening per strand is 1 mm. plus.

In making these experiments the original technique was used with the single exception of substituting dermal suture for catgut.

Dr. O'Connor has made some improvements in technique which I have been using with satisfactory results, but out of deference to him I have refrained from alluding to them in this communication, as I understand that he is preparing a paper on the subject for presentation at an early date.

TONOMETRY AND THE VARIOUS INSTRUMENTS EMPLOYED IN ITS PRACTICE

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(Continued from the May issue)

Schiøtz made his comparisons between tonometer degrees and manometer degrees upon dead human eyes, and he later changed the graphs by which the tonometer readings are translated into millimeters of mercury, because the first set of figures were too low. As the tension within the eye increases, the elasticity of its envelopes is continually lessening. The tonometer rod will make a shallower and ever shallower indent. The tonometer scale readings are equally spaced and the variation between the indent of say 30 mm. (or 2 on the tonometer scale) and that of 35 mm. (or 1 on the scale) is indeed microscopic. The adjustment between the regularly scaled readings of the tonometer and the ever decreasing indents on the one hand, and the ever increasing pressure values of the indents on the other, is supposed to be taken up by the graph supplied with the instrument. With practically all tonometers this is clinically satisfactory, but the readings of the tonometers as a group when compared with the manometer are usually too low when the tension of the eye is low and too high when the tension is high.

Ewald (1905) connected a rubber ball with a manometer and applied the ball to the cornea with sufficient pressure within the ball to flatten the corneal surface while it also flattened the rubber ball where contact was made. The amount of manometric pressure necessary for this was the tonometer reading.

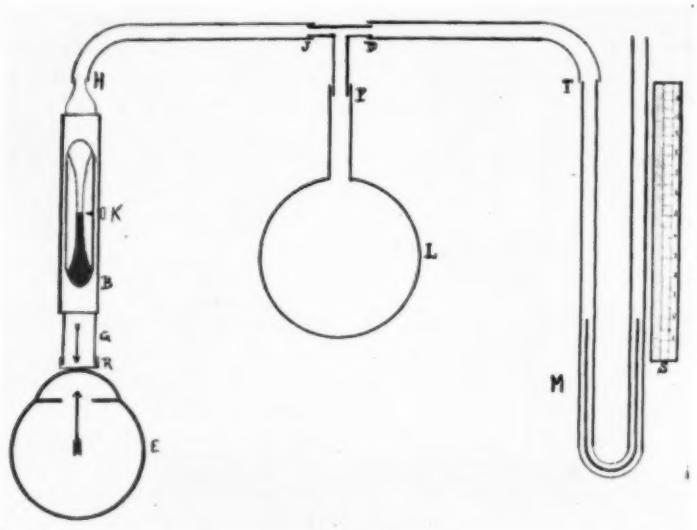

Fig. 15 (Lloyd). Coburn's applanation tonometer, 1908.

The Coburn applanometer (figure 15) was described in 1908 but it does not seem to have been actually made and used. The applanometer surface l is a rubber diaphragm fitted over the end of a glass tube which contains a colored fluid. The central figure L is a rubber bulb that supplies the pressure which is exerted alike upon the fluid in the tube G, with the rubber end R, and upon the manometer M, which

measures the pressure applied by the rubber bulb in order to flatten out both the rubber diaphragm and the corneal surface to which it is applied. When one is ready to use this instrument, the rubber diaphragm is applied to a hard flat surface and the pin K is set to show the height of the fluid when the applanometer diaphragm is flat. The instrument is now applied to the eye and adapts itself to the corneal curve, whereupon the bulb is compressed until the fluid has risen to the height necessary to indicate a flat contact of the rubber diaphragm with the cornea. The manometer will show the pressure in millimeters of mercury necessary to do this. Strictly speaking, the weight of the fluid in the glass tube should be taken into account, and this may be done by adding an equal quantity of water to the distal mercury column.

Helmbold (1909) thought it advisable to compare the readings of the two eyes and devised an instrument (figure 16) to take the readings of both at the same time. It rested upon the bridge of the nose and rods were pressed against the corneas by spring pressure. The illustration shows the simple details of this apparatus.

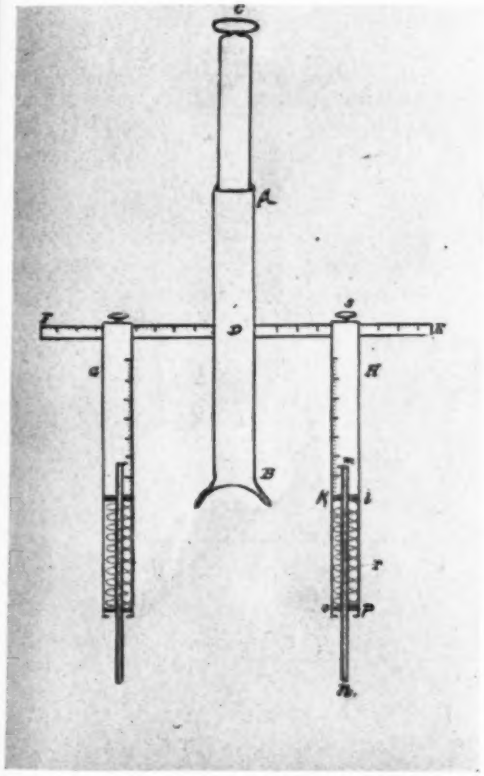

Fig. 16 (Lloyd). Helmbold's apparatus for detecting a difference in tension of the two eyes, 1896.

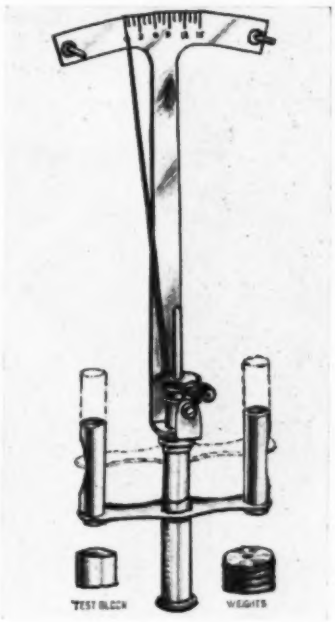

Fig. 17 (Lloyd). Gradle tonometer, 1912.

Gradle (1911) modified the Schiøtz instrument (figure 17) in order to have a smaller foot-plate, so as to make it easier to apply the instrument accurately to the cornea. The weights were easily added or removed. The radius of the foot-plate was 7.6 mm., small enough to leave visible iris all round.

The Stephenson-Wolinski tonometer (figure 18) appeared in 1911. It rested upon the upper and lower orbital margins at M and M as seen in the illustration, while held by the handle N. The eye was closed and the cup C applied over the globe with the upper lid between. The screw L adjusted the cup until the lines at O were continuous to indicate that the globe was under pressure. The moment the applied power overcame the resistance of the globe, the alignment at O was broken and the pressure necessary to do this was read

on the scale P as the pointer F indicated. The designers of the instrument asserted that all factors in the individual case remained constant except the intraocular pressure, thus eliminating from the equation such inconstants as the recession of the globe into the socket, which is a most important objection to the use of an instrument that has its base of support outside the globe of the eye.

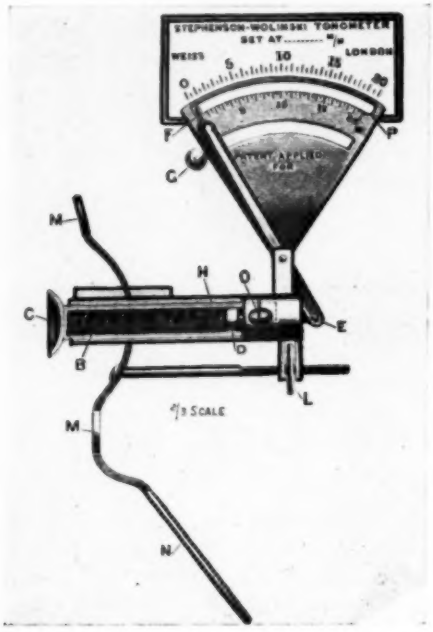

Fig. 18 (Lloyd). Stephenson-Wolinski tonometer, 1911.

Ruben (1913) modified the Schiøtz instrument in order to permit its use with the patient sitting upright. The pressure rod slid in a horizontal tube, at the proximal end of which was an upright lever arm carrying the weight at the top.

In 1914 McLean introduced his direct reading tonometer and reported the narrowest variations between tonometer and manometer readings of any investigator. With the manometer reading from 20 to 110 mm. of mercury, his tonometer varied 1 mm. for the lower readings and only 4 mm. during the higher pressures. This is indeed a remarkable achievement, for the Schiøtz apparatus applied in the same way gave from 3 to 8 mm. variation for the lower readings of the manometer (from 10 mm. of mercury as the lowest reading made) up to from 3 to 40 mm. variation in the upper regions (with 110 mm. as the top pressure). It is quite unnecessary to describe this instrument, as it is familiar to all. Its foot-plate is built on a 20 mm. radius, while Schiøtz used 30 mm.

The same year, Weill attached to the index of the Fick-Lifschütz applanometer an idler that ran along with the live needle but was left at the high

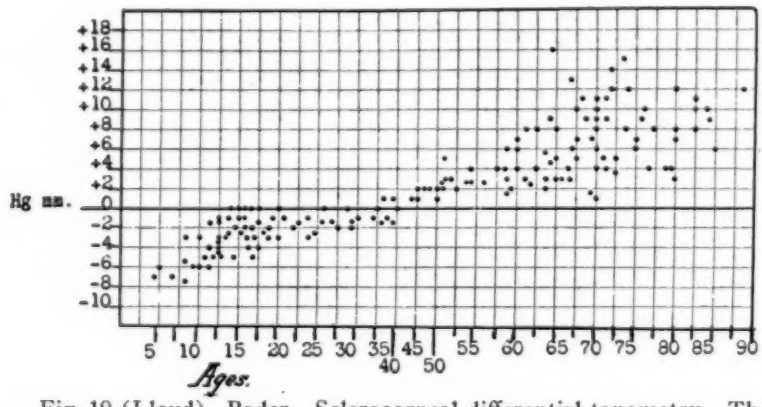

Fig. 19 (Lloyd). Bader. Sclerocorneal differential tonometry. The heavy transverse line indicates harmony of measurements made on the sclera with those made by applying to the cornea. There were ten of these. All below the line indicate scleral tensions below the corneal, while those with scleral tensions higher than corneal are recorded above the line.

point when the live needle returned to zero as the instrument was lifted. In 1915, McLean attached the manometer to a living eye and compared the tonometer readings, an experiment done but twice before, according to the literature of the subject, by Wessely and Seidel. Bader used the Schiøtz instrument (1918) to compare the readings made on the sclera and on the cornea. This had also been done several years before by Dor and Donders, who after forty years of age found higher scleral readings than corneal, whereas before that age the corneal were higher than the scleral. Bader undertook this to find, if possible, why some eyes collapsed and others did not when operated on for cataract. He examined 160 cases and found minus scleral tension from 0 to 7 mm. in 79 cases ranging from 5 to 42 years. The scleral tension was plus 1 to 16 mm. in 81 cases ranging from 44 to 89 years (figure 19). The Schiøtz foot-plate was not designed for scleral measurement, but for comparative purposes no fault could be found with its use in this way. Bader also advises examination for angiosclerosis, high blood pressure, and so on.

Römer (1919) modified the Maklakoff procedure by dropping the aniline dye upon the cornea and measuring the contact area with a magnifying device to accurately get the dimensions of the contact surface.

Brown (1920) introduced a very simple tonometer (figure 20) resembling to some ways that of McLean, but with a smaller foot-plate, 6 mm.

Albarenque brought out a spring applanometer about this same time, but its description is not available.

1921 was the year which brought us Cohen's mercury tonometer and also the very elaborate device of Stein. The Cohen instrument (figure 21) has a flexible bag of mercury which communicates with the rod transmitting pressure to the cornea, the mercurial column running upward in a delicate tube to indicate the millimeters of mercurial pressure against the scale. It is very simple indeed.

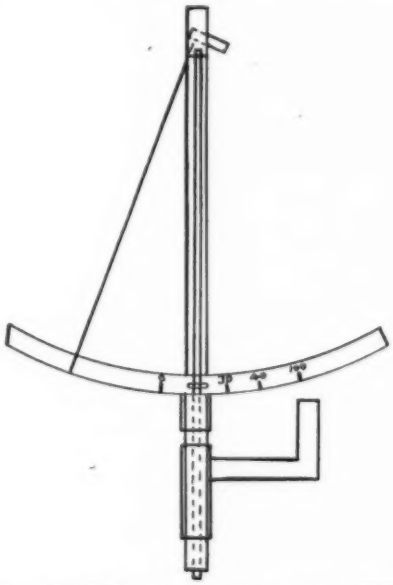

Fig. 20 (Lloyd). E. J. Brown, 1920.

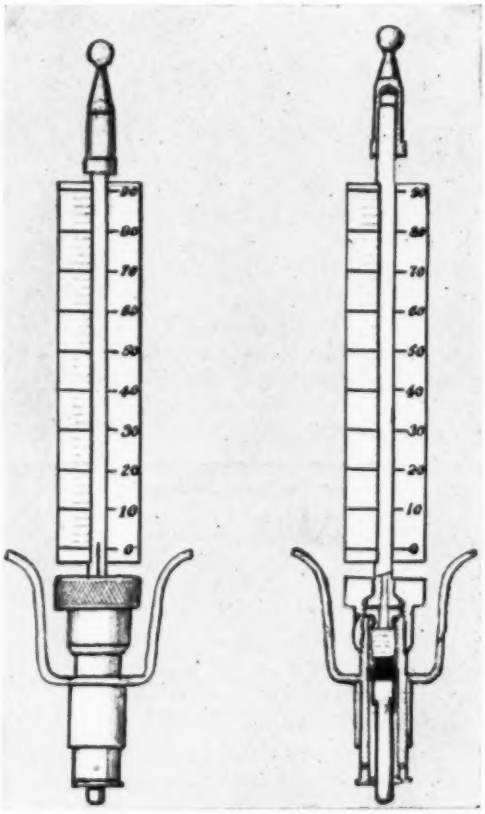

Fig. 21 (Lloyd). Mercury tonometer, Cohen, 1921.

Stein arranged a balance scale arm, as the illustration (figure 22) shows, with weights of 5, 10, or 15 gm. in a pan attached to the long arm. The weight at the end of the short arm could be accurately adjusted so that the foot-plate rested upon the cornea without weight, but by taking 5 gm., shall we say, from the pan on the long end of the arm the amount of pressure applied to the cornea could be accurately set. The depth of the indent was read on the scale against which the end of the long arm rose and fell. This was too elaborate for general use but was used by Stein for research purposes. The apparatus rested upon a table but was provided with adjustments so that both eyes could be measured without moving the instrument.

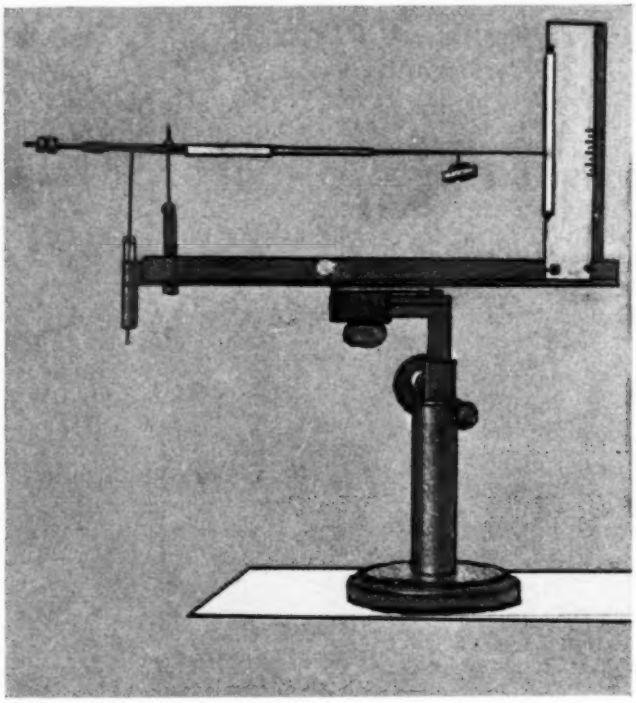

Fig. 22 (Lloyd). Stein, 1921.

Bailliart introduced his instrument in 1923. It was designed for taking both corneal and scleral tensions, using removable foot-plates for each method. The form of it is well known, the pressure is applied through a spring, and the standard of pressure applied is obtained by pressing the sleeve holding the instrument until a certain mark is exposed. The mechanism is entirely enclosed, and the scleral readings are placed on the same dial as the corneal, but the latter are in black and inside while the scleral are printed in red and are distally located. This may be used with the patient sitting, but the instrument is not well balanced and is not easily handled unless the patient reclines. It is sometimes worth while to take a scleral tension, if there is conical cornea or if a cataract or glaucoma operation has deformed the corneal margin above or if staphyloma is present. I have used this instrument a good deal, but scleral tonometry does not give the satisfactory readings of the corneal method. If one makes four scleral applications he is fortunate if he can get two reasonably alike. Why this should be is not evident. Some have insisted that the Bailliart instrument requires constant adjusting, but

this has not been the case with my intrument. While the possibility of using the instrument while the patient was sitting seems to have been its great recommendation, I have not been able to agree with this but should prefer the Souter instrument (figure 23) if readings with the patient upright were desired.

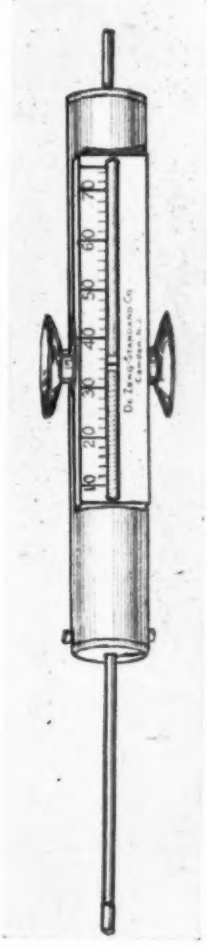

Fig. 23 (Lloyd). Souter tonometer, 1916.

Mangold and Detering have used a scale arm much like Stein's but, as this instrument must rest upon a table, the movement of the eye in the socket upon its bed of fat, when a weight is placed against the eye, makes the reading false. It may be remarked here that no instrument has ever been a success that did not rest upon the eye itself when the reading was being made.

Bodenheimer (1924) modified the Schiøtz instrument so that the index would leave an indicator at the highest reading, to permit the user to concentrate upon the application of the instrument.

Sergiewsky (1925) used the Lifschütz-Fick applanometer as the basis of his instrument, which has three concentric circles engraved upon the contact surface of the prism foot-plate, to indicate to the observing eye whether the area of contact was larger, smaller, or equal to the standard. In this way he avoided the use of a dye.

Wendt (1925) modified the Schiøtz instrument (figure 24) by inclosing the mechanism and making a permanent connection between the pressure rod and the index. The weight is placed at the top and can be easily changed or removed. The illustration explains its use.

From this review of the efforts made to accurately measure the pressure within the globe, it may be said that the only direct method is the manometer with the needle connected with the aqueous chamber; and this of course is not a feasible plan for every-day work. The indirect methods are two, indentation and applanation. The first may be employed by determining the amount of weight necessary to make an indent of a certain depth in the globe, or the reverse, the depth of the indent made by a certain weight, may be determined. The same two ways apply to the second method: the amount of weight necessary to flatten a certain corneal area may be determined, or the size of the area flattened by a definite weight. The weight in either case is applied by a spring or by loading the impressing device. The index of the process is either magnified by use of lever arms, or a mercurial column may be employed as by Weber, Coburn, and Cohen.

In the process of indirect measurement there are factors that can never be eliminated. They are the elasticity of the eye envelope, the pliancy of the

tissue at the place of application, and the size and the curve of the eyeball. If an indent is to be made, fluid must be displaced and room made for it elsewhere. In this process, the elasticity of the globe wall is an important factor and also the size of the eye, because the larger the eye the more easily is this adjustment made. The pliancy of the tissue at the point of impact has much

Fig. 24 (Lloyd). Wendt, 1925.

to do with the ease with which the plunger sinks into the eyeball, and the flatter the curve of the eyeball the less easily is the indent made, because with a sharper curve the amount displaced is less. We know from experience that the younger eye is more pliant than an older. The cornea is more responsive than the sclera, and especially so after forty-five years of age. In addition, the conjunctival coverings and the muscle insertions cannot be eliminated in scleral measurements.

A good tonometer should give reasonably similar readings when applied to the same eye, but, especially after fistulizing operations, repeated applications will give lower readings, as would be expected from the inevitable massage effect. This is similar to the effect of applying suction and release to the eyeball with a vacuum cup attached to an electric motor, a procedure which will temporarily reduce the pressure by several degrees in cases of glaucoma simplex. This is undoubtedly brought about by creating in the capsule about the eyeball a negative pressure which draws fluid out of the eyeball along the lymph sheaths of the vessels that leave or enter the eye, especially at the meridian.

There is one fatal objection to any apparatus which must be applied to the eyeball from without and does not rest upon the eyeball as do the instruments of Schiøtz and McLean; and this is the displacement of the eyeball in its fatty pocket. This factor cannot be estimated and leads to erroneous readings.

It is sometimes an advantage to have an instrument usable while the patient sits up; for which purpose the best is the Souter, because it is well balanced and can be easily applied. The accuracy of this instrument is not to be compared with that of the Schiøtz and the McLean, but it has its place.

Scleral tonometry is not reliable, for many reasons which may be summed up in the statement that successive readings do not agree. The constant increase in scleral rigidity after forty-five years is another important drawback.

Despite the lack of perfection in a process that must necessarily be at best an indirect approach to the goal, we can repeat the words uttered by Dor in 1868, and can say of the tonometers given us by Schiøtz and McLean: "The tonometer in its present form is as yet so far removed from exactness that it cannot be regarded as mathematically correct, but on the contrary it is sufficiently exact for both practical and clinical use."

14 Eighth avenue.

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DESTRUCTIVE PURULENT OPHTHALMIA ACCOMPANYING AN ERUPTIVE FEVER WITH STOMATITIS

Report of a case

JOHN M. WHEELER, M.D., F.A.C.S.
NEW YORK

To two cases previously reported by Stevens and Johnson, and one of probably similar nature reported by Rutherford, the author adds a new case. The condition is febrile, with a general skin eruption not corresponding to any exanthematous or cutaneous disease previously identified. The disease is serious only as regards the eyes, but the incidental membranous conjunctivitis seems to tend to more or less complete destruction of sight, by the development of extremely severe corneal ulceration. Read before the American Academy of Ophthalmology and Otolaryngology, October 21 to 25, 1929.

Jack Geller, aged eight years, a Jewish boy, was admitted to Gouverneur Hospital October 11, 1927. The following notes were made by the house physician, Dr. C. W. Hanson:

"Patient has had the usual childhood diseases including diphtheria. He was perfectly well until two days before admission. At that time he was caught in the rain and came home feeling very badly with pains and aches all over his body. He remained sick until the day of admission, when his eyes became much injected, his nose and mouth dreadfully inflamed. The mouth was causing a great deal of distress. A rash also broke out on the day of admission, two days after his first symptoms.

"Physical examination: An acutely ill child, apparently suffering a great deal of pain. Head: normal shape. Face: scattered erythematous patches. Eyes: very red and much photophobia and lacrimation. Nose: slightly inflamed mucous membrane. Mouth: lips protruding and large grayish membranes over lips, tongue, and pharynx. Throat: very injected and small ulcerations. Neck: negative. Chest, abdomen, and legs: negative except for rash which had appearance of erythema multiforme, but did not have proper distribution. It was chiefly on chest and back, very little on extensor surface of extremities. (See figure 1.)

"October 12, 1927, skin consultation: Found out child had been in habit of taking 'Boll's rolls" whenever sick. Made diagnosis of erythema multiforme, possibly caused by phenolphthalein with secondary infection of mouth and eyes (Dr. Josiah P. Thornley). Head of service at this hospital, Dr. Thos. E. Waldie (pediatrics), believed mouth condition due to Vincent's angina.

"Several days after admission child developed typical scarlatinal eruption, which disappeared the next day, and ulceration started on the cornea. Repeated cultures for diphtheria organisms or Vincent's angina were negative from eyes, ears, and nose. A gram-positive diplococcus was always found from eye. X-ray of chest negative."

The boy was transferred to Bellevue Hospital October 23, 1927, and was admitted on the eye service, where he remained until January 9, 1928, a period of seventy-nine days.

At the time of admission to the eye wards at Bellevue, the little patient had been sick two weeks. He was not prostrated and appeared in good spirits. His temperature was 99°. His appearance was pitiable because of the condition of his eyes and mouth. (See figure 2.) The eyelids were swollen shut, with pus streaming from them. The nares were excoriated, and adherent to the lips were heavy dark crusts and fresh blood. Scattered over the body were brownish spots unlike anything I had seen. In response to a request for a consultant from the department of pediatrics, Dr. A. M. Stevens called to see the child and diagnosed the disease as that described by him and F. C. Johnson in 1922[1] under the

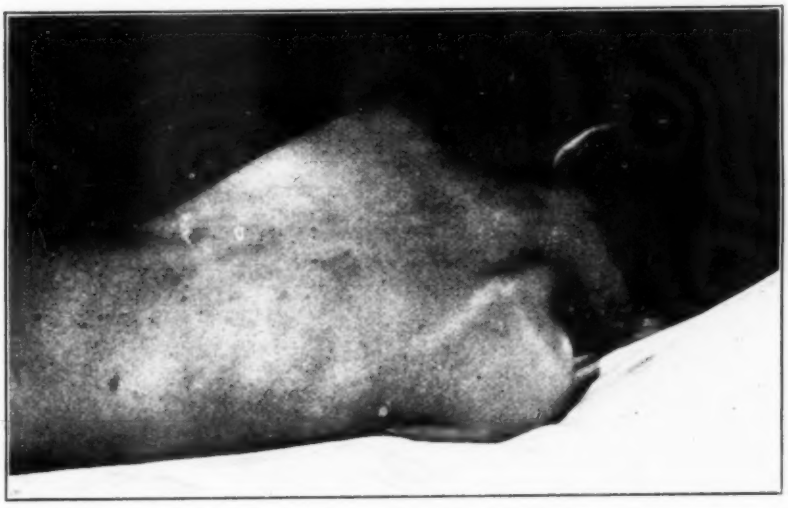
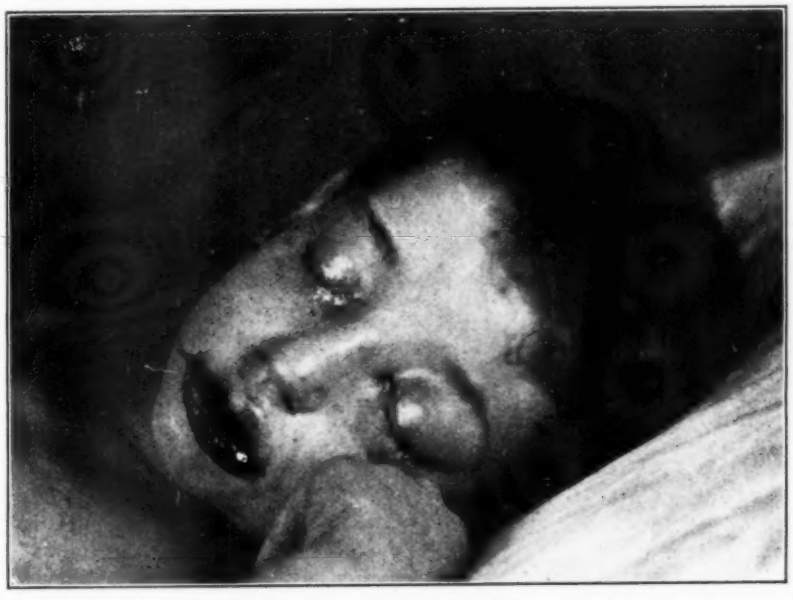


Fig. 1 (Wheeler). J. G. on seventeenth day of illness. Brown spots on back. Scalp free from lesions.

title "A new eruptive fever associated with stomatitis and ophthalmia". He said the cause was unknown and he had no definite suggestions as to treatment. The long period of observation and the importance of the disease to ophthalmologists make a report of moderate detail justifiable.

The temperature ranged from 98° to 101°. During the period of activity of the disease the temperature was near 100° most of the time. In a general way it was lower than in the previously reported cases.

The pulse ranged from 80 to 120. During the height of the disease it was usually over 100, regular and of good quality. The respiration ranged



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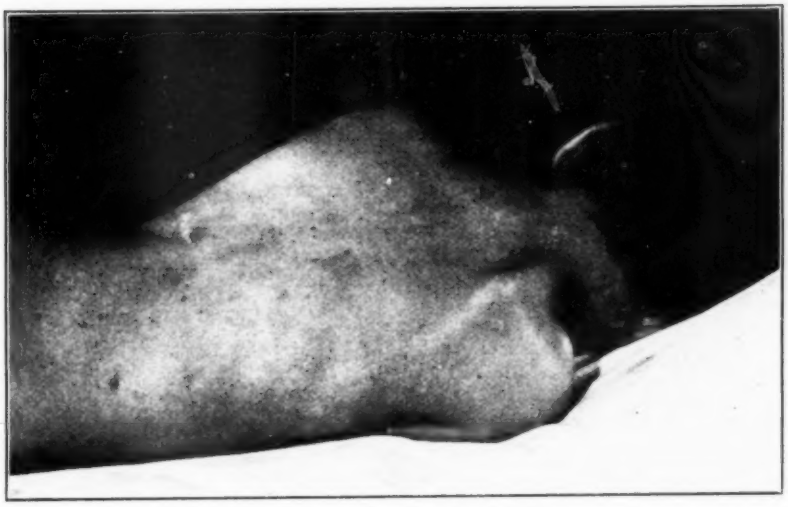

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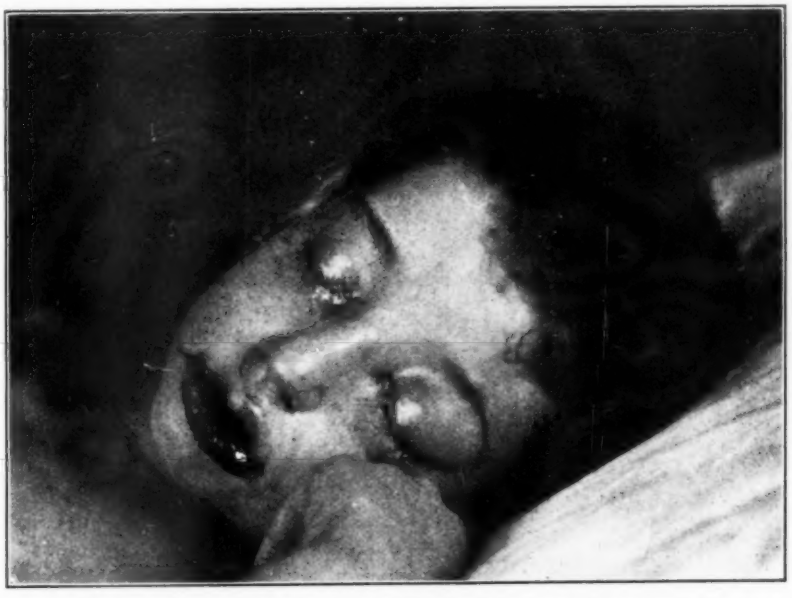

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from 18 to 26, and the patient never complained of not getting enough air, in spite of the swelling of the nose and mouth.

The urine never showed albumin, casts, or sugar, and it never had any abnormality. The blood examinations did not show important deviation from the normal.

Examination October 26, 1927, showed leucocytes 7200, polynuclears 78 percent, transitionals 6 percent, lymphocytes 10 percent, myelocytes 3 percent, basophiles 3 percent. The red blood cells showed a reduction in hemoglobin. November 10, 1927, erythrocytes were 4,800,000, with 85 percent hemoglobin and color index of 0.9. The Wassermann reaction was negative on October 26th and on November 7th. Chemical examination showed NPN=35 mg., and sugar 121.

During his stay in the hospital the appetite was good, the child slept well, and usually was happy. Several times he perspired profusely at night. Occasionally he said he was tired and that he had pain in the head, but apparently he was comfortable most of the time.

Eyes: On admission, at the fourteenth day of the illness, the eyelids were greatly swollen and a profusion of yellowish pus came from the palpebral fissures, adhering to eyelashes, skin of lids, and face. Separation of the lid margins was difficult, but it was possible for the examiner to see that both corneas were almost completely ulcerated and that the conjunctiva of the globe was edematous and injected. The iris could not be seen on account of corneal ulceration.

Vision O.D., light perception. Vision O.S., no light perception.

The secretion from the conjunctiva was persistent. It was not stringy, and the conjunctival condition could not have been called membranous conjunctivitis. Bacteriological reports carried no conviction. The laboratory report of October 25, 1927, was as follows:

"Direct smear from eye: many pus cells, diploid and short-chained gram-negative cocci, usually intracellular; no other organisms.

"Culture of eye smear: blood plate shows pure culture of short chained nonhemolytic streptococci. On Loeffler's medium, no growth after twenty-four hours. Subculture gives mixed staphylococci, short-chained streptococci, and diphtheroid organisms.

"Throat culture: no growth in eighteen hours on Loeffler's.

"October 29, 1927: Direct eye smear: Gram-negative biscuit-shaped diplococci, intracellular and extracellular.

"Eye smear culture: Rapid growth of small colonies of Gram-negative diplococci. Gonococcus ruled out by rapidity and ease of growth, probably micrococcus catarrhalis or pharyngis siccus. Also present, as numerous large colonies, bacillus xerosis and 'malignant' staphylococci (morpho-

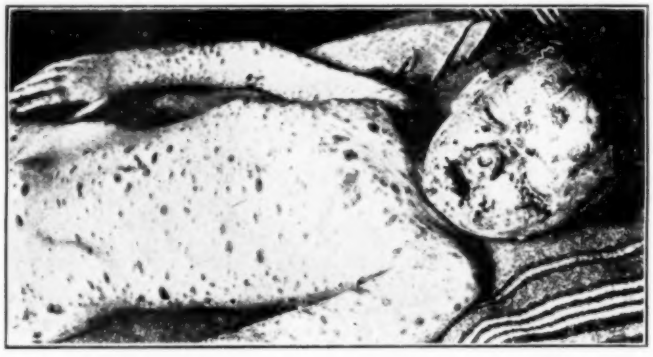

Fig. 3 (Wheeler). Case one of Stevens and Johnson showing nature and extent of eruption on thirteenth day of illness.

logical deviations, particularly to very large organisms).

"Throat culture: On blood plate, mixed culture, no organisms predominating, diphtheroids occasionally present."

Ulceration of the corneas with perforation resulted in complete loss of sight in the left eye, with hypotony, and reduction of the sight to light perception in the right eye. It is to be hoped that light perception will be kept in this eye, as the globe has not degenerated.

Nose: At the nares small crusts formed from excoriation, and a moderate amount of mucopurulent secretion ran from the nose. It seemed not to bother the patient much.

Mouth and lips: In the mouth, on the lining of the cheeks, and on the gums and tongue there were several gray patches at the time of admission and there were recurrences of patches. No bullæ were seen, but the gray spots resembled those seen in pemphigus after formation of bullæ. The tongue was moderately swollen. Heavy black crusts with spots of fresh blood covered part of the upper lip and all of the lower, and there was marked swelling. The lip crusts and the mucous membrane patches persisted for weeks.

Skin: The eruption was scattered over the face, ears, chest, back, arms, forearms, hands, thighs, legs, feet. Practically the whole body was involved, but the scalp was free. There were brown patches one-half to one centimeter in diameter, very little raised, and only part of them encrusted. They did not bleed and they did not itch. There never was bleb formation. The lesions all healed without leaving scars and with almost no ultimate disturbance of pigment distribution.

When the patient left the hospital at the end of seventy-nine days, the sight was gone in one eye and all but gone in the other. There were adherent leukomas, but nothing else to tell the tale.

Treatment: Boric acid irrigations, hot compresses, cold compresses, bichloride vaseline, argyrol, atropin and dionin were used for eye treatment. Glycerin and lemon juice were applied to the lips for some time, but sterile vaseline perhaps was most helpful. If I should have to deal with another such case, I believe I should perform early canthotomy with thorough incision of the external canthal ligaments to release the eyelids, in the hope of rendering effective treatment to the conjunctiva and cornea by irrigations and antisepsis. Without relaxation of the lids proper drainage and proper treatment are impossible.

Effective eye treatment is the only urgent need.

In a paper read before the eye section of the American Medical Association in 1929, under the title of "Membranous conjunctivitis with loss of eyeballs", Rutherford[2] reports a case which he found difficult to classify and which may possibly be akin to those described by Stevens and Johnson and to my case.

L. H., a boy twenty-seven months old, was admitted to the Iowa University Hospital on December 14, 1928. In October, 1928, the baby had an abscess on a finger joint. He next had a coryza and a pharyngitis. About ten days from the beginning his right eye, and three or four days later his left eye, became red and watery and the lids became swollen. The conjunctiva then became inflamed and covered by membranous exudates. He was disposed to drowsiness for days at a time.

"Examination of the right eye under general anesthesia disclosed a partial symblepharon and a corneal staphyloma; of the left, an extensive symblepharon, a healed corneal perforation, and some shrinking of the organ. All four lids, none of which were now markedly swollen or tumefied, bore thick, tough grayish yellow chamois-skin-like false membranes on the tarsal surfaces. These were readily removed entirely with forceps; the underlying tissues presented a granular appearance with many bleeding points. A purulent secretion coated the nasopharynx. The submaxillary and sub-

mental glands were enlarged but not hard. The temperature was elevated.

"The laboratory, from numerous smears and cultures, repeatedly reported the presence of staphylococcus aureus hemolyticus, streptococcus hemolyticus, and streptococcus viridans, with one gram-negative bacillus, but never diphtheric or diphtheroid organisms. The false membranes consisted of the fibrinopurulent exudates which contained numerous inflammatory cells, most of which were polymorphonuclear leukocytes. The Wassermann reaction was negative.

"Throughout the two months' period of observation, a seropurulent fluid was intermittently discharged from the nose; a brownish-red maculopapular eruption of varying intensity was present on the forehead, cheeks, thorax and forearms. The department of pediatrics, in several physical examinations, found nothing to account for the temperature variations, as recorded in the accompanying chart, except a persistent respiratory tract infection."

The right eye was removed December 21, 1928, and the left, January 21, 1929. The patient was dismissed February 11, 1929; at that time both sockets were discharging a purulent material similar in appearance to that seen on admission, except that it was not so fibrinous or abundant. At the time of discharge the disease had had a duration of four months.

At a recent meeting of the Brooklyn Ophthalmological Society, Dr. John Bailey reported a case that had been recognized as belonging to the group discussed in this paper. He had called Dr. Stevens, who had agreed with Dr. Bailey that the case belonged to the class of cases described by him. I shall not give the details of Bailey's case report, as he purposes publishing them soon. Dr. Bailey's paper will be a valuable one, as he had the opportunity, as an ophthalmologist, to study the patient in the early stages of the disease.

Stevens and Johnson in their paper report two cases, which they studied with Dr. L. Emmett Holt, Dr. John A. Fordyce, and Dr. Warfield T. Longcope. No recognized diagnosis could be made from the symptoms and course of the eruption in these two cases, and no description of a like skin condition could be found.

"Case 1 (H. S.) was a white boy, aged eight years, admitted to Bellevue Hospital May 1, 1922, on the tenth day of his illness. There was nothing significant in the family history; he had diphtheria at eighteen months, pertussis at three years, and measles at seven years. He had been successfully vaccinated and the tonsils had been removed at seven and a half years. His general health had been good until shortly following the tonsillectomy, when he was in a hospital for fourteen weeks with a septic temperature, enlarged spleen, jaundice, and a blood culture which showed staphylococcus aureus on two occasions. He recovered from this, and was apparently well for two and a half months prior to the onset of the present illness."

"Case 2 (S. M.) was a Jewish boy, aged seven years, with a negative family history, who had been always strong and well except for measles at four years. He had been vaccinated successfully. Three weeks before admission, he complained of pain in the eyes and weakness. The next day the eyes were discharging, and a rash was noted on the body which the family physician called "black measles". On the third day of his illness he was taken to the Willard Parker Hospital, where he was found to have a temperature of 103 F., with signs of bronchopneumonia at the right base, a purulent conjunctivitis with great edema of the lids, and a skin eruption of which the tentative diagnosis of erythema multiforme was made. This eruption was described on the third day as being macular, hemorrhagic, with a few papules, with areas of excoriation on the face. The eyelids were edematous and pasted shut with thick pus and the mucous membrane of the mouth was practically exfoliated. The boy remained at Willard Parker Hospital for two and a half weeks, with the pneumonia resolving

gradually. The temperature ranged from 101 to 104 F. for two weeks, then became irregular at a lower average with an occasional rise to 103 F. The boy was irrational during the first week, and there was great prostration, weakness, and loss of flesh. In spite of instillations of boric acid solution and argyrol, corneal ulcers formed, with perforation and abscess formation in both eyes involving all the structures of the globe."

Inasmuch as Dr. Stevens was entirely responsible for the diagnosis in the case I am reporting, and inasmuch as my knowledge of the condition is entirely due to his instruction, I am taking the liberty of quoting freely from his paper.

His summary is as follows:

"1. Two cases have been observed of a generalized cutaneous eruption, not conforming to any recognized dermatologic condition.

"2. Both cases occurred in boys, one aged seven, the other eight years, coming from widely separated parts of New York City, with no possibility of contact.

"3. Both cases manifested a purulent conjunctivitis, in case 2 going on to panophthalmitis and total loss of vision, and in case 1 responding to treatment, but leaving a severe corneal scar. The pus showed pyogenic organisms only, no gonococci.

"4. A high and continuous fever was present in both cases, explainable in case 2 by a lobar pneumonia, but in case 1 without apparent cause other than the skin condition.

"5. The eruption showed certain characteristics, identical in each case. The onset was with fever, the rash appearing on the back of the neck and chest, spreading to the face, arms and legs during a period of about eighteen days, the last lesions to appear being on the soles and palms. At this time resolution of the first lesions began.

"The eruption consisted of oval, dark red to purplish macules, separated by normal areas of skin. These became in a few days raised firm papules of brownish purple, from 0.5 to 2 cm. in the longest diameter, without areola, and without subjective symptoms of pain or itching at any time. A few of the largest spots showed yellow, dry necrotic centers. The lesions on the forearms and shins were smaller and more thickly crowded together. No pustules or vesicles were to be seen. The scalp was at all times free of lesions; but the mouth and lips were intensely sore and inflamed. In case 1 bullæ were noted in the mouth at the end of the first week.

"After the third week resolution began in the order of appearance of the lesions. This consisted of a shrinking of the macule to a horny oval of dark brown color, with raised papery edges. From the fourth week these scales dropped off, leaving a faint pigmented area, without pitting or scarring. By the fifth week the chest, face, and back were clear, except for pigmentation, while resolution and crusting were still going on on the forearms and legs. Fall of temperature coincided with the period of resolution of the skin lesions.

Diagnosis

"1. A skin eruption from drug ingestion is ruled out by careful inquiry, which showed that no drugs whatever had been administered in either case.

"2. A skin eruption from food poisoning can hardly be considered, from the entire absence of gastrointestinal symptoms in the presence of a high and sustained temperature reaction.

"3. Syphilis is to be excluded by the character of the lesions, the age of the children, the negative history, and the negative Wassermann reaction in case 1.

"4. Pemphigus was suggested, from the observation of bullæ in the mouth of case 1. Nothing further in the course of the disease, the appearance of the eruption, or its evolution gave any support to this diagnosis.

"5. Hemorrhagic measles, as it happened, was the primary diagnosis of the family physician in each instance. Both children had already had measles, in case 1 at seven years, and in case 2 at four years. While excusable at

the onset, this diagnosis is quite indefensible in view of the distinctive character of the lesion as described.

"6. A sepsis with generalized eruption must be considered as a possibility in spite of the negative blood culture in case 1. This diagnosis is suggested by the history of a prior sepsis in case 1, and might account for the temperature and course and the occurrence of a pneumonia in case 2. The superficial nature of the lesions, their character and progressive appearance over nearly three weeks, and the leukopenia argue against this supposition.

"7. Erythema multiforme, from some unknown toxic cause, was proposed as a diagnosis, but this is unsatisfactory from the character and distribution of the lesion, the lack of subjective symptoms, the prolonged high fever, and the terminal heavy crusting.

"8. There remains the possibility that this condition represents a distinct disease which has not hitherto been recognized.

"Comment. While the true diagnosis of this condition must be left an open question, the report of these two cases seems justified if only to draw attention to the serious effects to be expected unless the eyes in any similar case receive early and painstaking treatment. The boy in case 2 is totally blind, while the other boy escapes with an impairment of vision in one eye. Furthermore, it is hoped that this report may lead to the study of other or similar cases. Quite possibly the observation of this condition in its first stages may clear up the vexed question of its etiology.

"Finally we have been impressed by the striking picture presented by these cases. Here is a syndrome of dramatic onset, with fever, conjunctivitis, and cutaneous eruption. The child is prostrated, the mouth and tongue are inflamed and raw, the eyelids are swollen, and pus streams from the eyes. There is a course of three or more weeks of high fever, with leukopenia. The eruption, unlike any hitherto described, comes progressively, for two weeks or more, matures and resolves in horny crusts in the order of its appearances. The temperature falls with the resolution of the skin lesions. This syndrome suggests strongly an infectious disease of unknown etiology. We believe that this condition deserves to be considered a definite clinical entity."

Here we have a pathological entity occurring in childhood with striking signs, but of great importance only because of its destruction of sight. It is a condition of interest to the pediatrician, but one of first importance to the ophthalmologist.

30 West Fifty-ninth street

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[1] Stevens, A. M., and Johnson, F. C. A new eruptive fever, associated with stomatitis and ophthalmia. Report of two cases in children. Amer. Jour. Dis. of Children, 1922, v. 24, pp. 526-533.

[2] Rutherford, C. W. Membranous conjunctivitis with loss of eyeballs. Paper read before Sec. on Ophth., Amer. Med. Assoc., 1929, July 8 to 12.

CONSERVATION OF THE LACRIMAL SAC

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Several plastic procedures for reestablishing communication between the lacrimal sac and the nose are discussed, and the technique of Dupuy-Dutemps and Bourguet is especially recommended, as avoiding destruction of the mucous membrane of either the nose or the lacrimal sac, and rendering unnecessary the postoperative use of probes or drains. Read before the American Academy of Ophthalmology and Otolaryngology, October 21 to 25, 1929.

The removal of the lacrimal sac has been practiced continuously since reintroduced by Berlin in 1868. This operation relieves empyema of the sac. Removal is always followed by lacrimation at least during cold weather.

In 1904, Toti devised a combination of extirpation and window resection of the lacrimal fossa to the nasal cavity with destruction of most of the mucous membrane of the sac. (Figure 1.) This

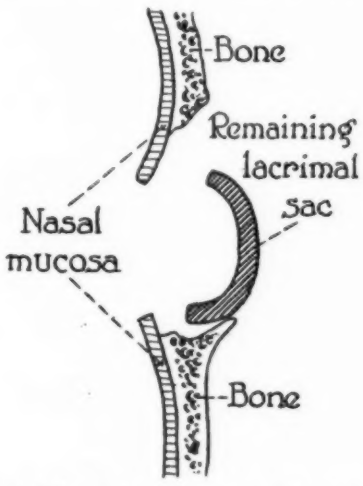

Fig. 1 (Knapp). Diagrammatic representation of Toti's method.

procedure was to reestablish the flow of tears through an artificial canal. Toti's dacryocystorhinotomy was the beginning of an era of conservation of lacrimal sac drainage. His technique has been modified by Kuhnt and others. This modification is practiced today in Germany and in the Scandinavian countries. In 1911, West described his intranasal operation of dacryocystorhinotomy. This is a more extensive removal of the lacrimal sac than Toti's procedure. Mosher, Wiener and Sauer, Benedict, and many others have introduced modifications of West's intranasal operation. All of these operations whether endonasal or external have resulted in a partial resection of the lacrimal sac and have left a wound through the nasal mucous membrane that heals by the formation of scar tissue. The opening must be treated by drains, probes, stylets or by radium as recommended by Withers. Mosher says that "all intranasal methods must face the danger of reclosure of the canal, and that every operation on the lacrimal and nasal duct is only a temporary success, unless supplemented with frequent probing or the prolonged wearing of a stylet". Operations that enter the sac through an incision of the canaliculus will fail, as the function of lacrimal drainage is thereby destroyed.

The techniques of Halle, Benedict, and Wiener and Sauer do not destroy a large part of the sac, thereby preventing closure of the cavity by granulation tissue.

The technique of Cirincione utilizes all of the lacrimal sac. Burch's procedure is along similar lines. Postoperative treatment is necessary even in this method, to prevent closure of the artificial canal into the nasal cavity by scar tissue formation. Any procedure that slits or destroys the canaliculus as advocated by Pratt, Green, or Prince will defeat its own purpose. No lacrimal drainage is normal after this procedure.

Direct anastomosis of the lacrimal sac to the nasal mucous membrane by sutures permits the wound to heal by

first intention. In the plastic dacryocystorhinostomy of Dupuy-Dutemps and Bourguet none of the nasal mucosa or lacrimal sac is destroyed. Only the bone separating the two mucous layers is removed. (Figure 2.) Tjanides prefers the term ascorhinostomy, meaning a union of the lacrimal sac to the nasal cavity.

Many cases of epiphora are due to other causes than obstruction of the lacrimal canal. Capillary drainage is

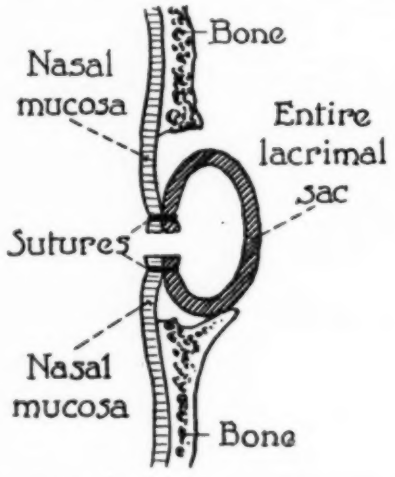

Fig. 2 (Knapp). Diagrammatic representation of the method of Dupuy-Dutemps and Bourguet.

lost by eversion of the lids after injury or chronic thickening of the lid margins. Obstruction of the canaliculi prevents the reestablishment of drainage in the lower part of the lacrimal system.

Tuberculosis of the lacrimal sac or new growths are contraindications to dacryocystorhinostomy. Trachoma is a contraindication to surgical interferance with the lacrimal sac. Tumors of the sac should be treated by radical surgery or by radium and roentgen rays. Tuberculosis or tumors of the lacrimal sac are comparatively rare.

Ulcus serpens may require hasty removal of the lacrimal sac to eliminate the focus of infection.

All operative procedures within the globe must be antedated by elimination of the danger of infection from the lacrimal sac. Extirpation of the sac either by the external route or by the endonasal route will quickly remove the infection arising from the lacrimal sac. This is usually followed by epiphora. When time permits the infection may be removed and epiphora eliminated at the same time by plastic dacryocystorrhinostomy.

Many cases of epiphora may be cured by conservative treatment as described by McCoy. The most effective simple measure is dilatation of the upper and lower puncta. After dilatation the sac may be filled with a solution of holocaine and adrenalin to reduce the congestion in the lacrimal sac and canal. Many cases are cured by this simple treatment. Recent cases of obstruction of the lacrimal canal may be cured by the passage of Bowman's probes without slitting the lower canaliculus. Probing is often a temporary cure, and the majority of these cases will suffer from later obstruction. The use of albolene has been advocated. It has its dangers. Recently sea tangle has been described by Brown as an effective measure for the relief of lacrimal obstruction.

After entering the nasal cavity from the lacrimal fossa, one soon learns of the extreme variations in the position of the middle turbinate as well as in the

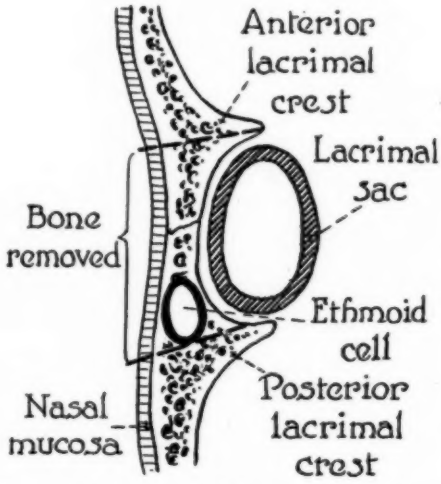

Fig. 3 (Knapp). Relationship of ethmoid cell to lacrimal sac. (Modified from Onodi.)

location of the anterior ethmoid cells. Onodi has demonstrated cells lying in the immediate vicinity of the lacrimal fossa. (Figure 3.) A cell will be found mesial to the lacrimal fossa in about one-half of the cases. The frontal sinus may even come down below the lacrimal sac. Horner's muscle, which is the posterior half of the internal palpebral ligament, is left intact after the incision.

It is unnecessary to establish a large opening to the nasal cavity. If this opening is a little larger than the size of the combined puncta of the upper and lower lid, drainage will be established. An enlarged middle turbinate may overhang the lacrimal fossa and prevent drainage. In such a case the tip of the turbinate should be removed. Any incision of the canaliculi will lessen the normal flow of tears. This procedure is very rarely warranted and in most cases destroys the function of the entire lacrimal apparatus in that it eliminates the contact of the punctum with the bulbar conjunctiva. In chronic dacryocystitis, the drainage of the pus and the restoration of the flow of tears will be relieved by anastomosis of the tear sac to the nasal mucous membrane.

Fluoroscopy of the lacrimal sac after the injection of lipiodol will readily demonstrate total obstruction of the lacrimal canal. At the same time the size of the sac is determined.

Chronic dacryocystitis may be the result of chronic sinus disease, trauma with injury to the bony canal, or malformation as the result of syphilis. The plastic dacryocystorhinostomy of Dupuy-Dutemps and Bourguet is indicated for the relief of all cases of chronic dacryocystitis, whether a mucocele is present, empyema, simple lacrimation, or a chronic fistula when the lacrimal canal is obstructed.

The operation is performed under local anesthesia as described by O'Brien for extirpation of the lacrimal sac. "Procaine hydrochloride, in a strength of two per cent in physiologic sodium chloride solution, is practically a perfect anesthetic for infiltration

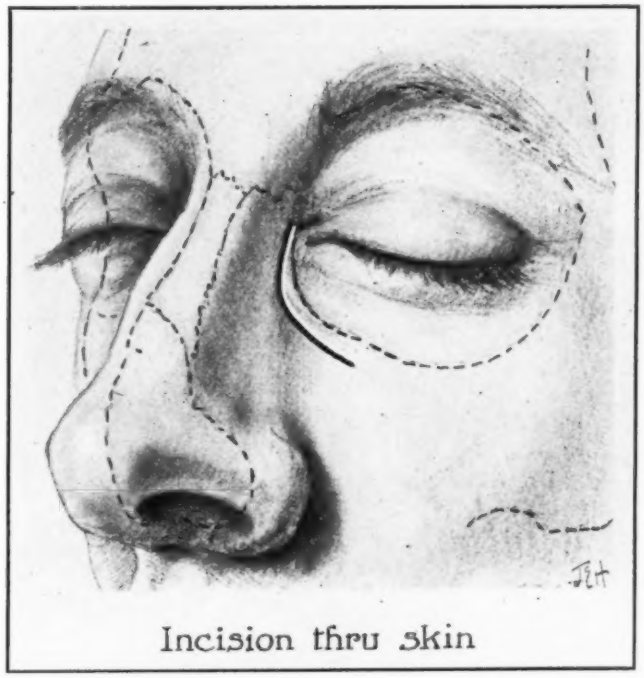

Fig. 4 (Knapp.) Plastic dacryocystorhinostomy.

anesthesia and nerve block. It should be freshly prepared, sterilized in the autoclave or by boiling, and combined with epinephrin just prior to injection. Before injection, one should decide on the amount of solution to be used and add epinephrin in quantities such that the total amount received by the patient will not be more than eight to ten minims (0.5 or 0.6 c. c.)

"Prior to the extirpation of the lacrimal sac, instillation anesthesia is used, followed by a two percent procaine hydrochloride solution into the sac, through the natural channel if possible. As a final step the supratrochlear, infratrochlear, and infraorbital nerves are blocked".

The skin incision starts at the level of the insertion of the internal palpebral ligament and 3 mm. mesial to the ligament. (Figure 4.) The first half of the skin incision must be vertical. The lower half of the incision is curved parallel to and three millimeters below the infraorbital margin. This direction should be followed carefully, to correspond to the folds in the skin and to prevent a noticeable scar. The dissection through the superficial fascia, the orbicularis palpebrarum muscles, and the deep fascia is the same as for extirpation of the sac. The muscle fibers are separated, but not cut.

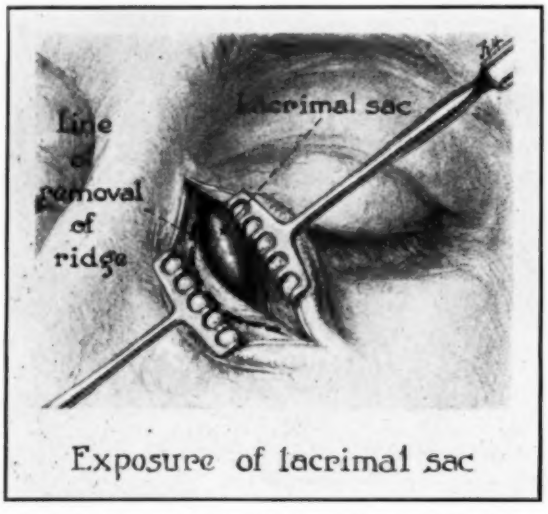

Fig. 5 (Knapp). Plastic dacryocystorhinostomy.

The mesial half of the sac is separated from its fossa and held toward the globe by a retractor. If the sac is extremely thin the separation may include the periosteum lining the lacrimal fossa. The periosteum is separated from the bone (externally), exposing the lacrimal crest. The lacrimal crest is then completely removed with a chisel. (Figure 5.) This allows easier entry to the lacrimal fossa. A small opening through the bony fossa is first made with a chisel, exposing the nasal mucosa, which is at once elevated in all directions. The bone bounding the lacrimal fossa is entirely removed from the anterior to the posterior crest, and from the internal palpebral ligament

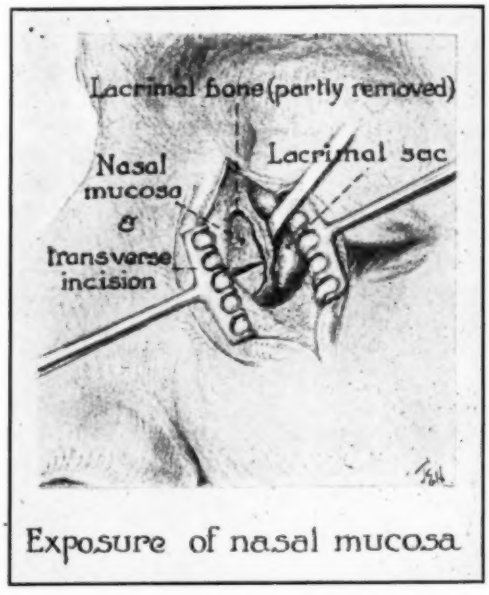

Fig. 6 (Knapp). Plastic dacryocystorhinostomy.

above to the beginning of the lacrimal canal below. This is best done with a Citelli forceps.

In the original operation the incision of the lacrimal sac and the nasal mucosa is vertical. The author prefers a horizontal incision well toward the lower part of the lacrimal sac. (Figure 6.) The horizontal incision through the nasal mucosa is more easily drawn into the bony orifice. It does not make too large an orifice from the lacrimal sac to

the nasal cavity, and admits a Yankauer needle readily. If the vertical incision is used, it must be well back in order that the anterior lip of the nasal mucosa shall be sufficient to come around the thickened bony wall. The corresponding edges of the incised mucosa of the lacrimal sac and of the nose are carefully united with sutures. (Figure 7.) The sutures may be 000 catgut or preferably fine twisted silk, which is less apt to tear the delicate membrane.

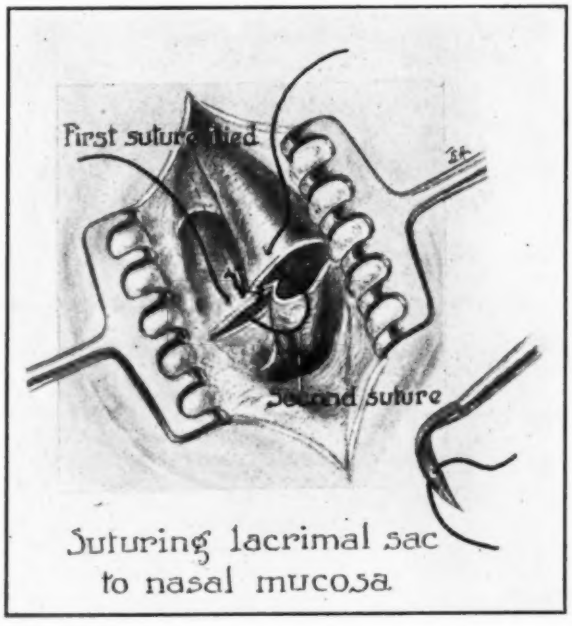

Fig. 7 (Knapp). Plastic dacryocystorhinostomy.

Various needles have been devised to introduce these sutures. The author found the Yankauer nasal suture needles, half curved, right and left, the most satisfactory. In the right fossa the right needle is used for the upper sutures and the left needle for the lower sutures, and vice versa in the left fossa. The last anterior suture is brought through the deep fascia and muscle and tied. The skin is closed by interrupted sutures.

White's ointment is applied freely in the cul-de-sac and over the skin incision. The eye is covered with a pad. There is some oozing from the nasal mucosa for the first twenty-four hours. The skin sutures may be removed in four or five days. It is well to irrigate the sac on the fourth day to remove blood clots. There is no other treatment necessary, unless there is considerable pus in the sac at the time of operation. Under these circumstances, the sac is irrigated with normal saline for a few days. No other treatment is indicated. A cure is indicated by the passage of a solution of fluroscein from the cul-de-sac through the artificial canal to the nasal cavity.

Summary

1. Plastic dacryocystorhinostomy does not destroy the mucous membrane of the nasal cavity nor of the lacrimal sac.

2. The artificial canal heals by first intention, without the formation of granulation tissue.

3. The physiologic function is reestablished, so that fluorescein passes from the conjunctival cul-de-sac to the nasal cavity.

4. Pus rapidly disappears from the sac after the operation.

5. Fistulous openings from the sac close readily after drainage is reestablished.

6. No probes nor drains are found necessary following this operation.

7. Postoperative treatment consists of removal of the skin sutures plus one or more irrigations of the sac through the canaliculus.

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MELANOMA OF THE CHOROID, COEXISTING WITH TUMOR ON CHEST WALL

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BROOKLYN

It first became possible to make a definite diagnosis of tumor after withdrawal of subretinal fluid through a scleral trephine opening. Another tumor, diagnosed as probable sarcoma, was found beneath the skin of the chest wall. The eye was enucleated, and the orbit and the chest tumor were treated with x-ray. Read before the Brooklyn Ophthalmological Society, October 17, 1929. From the department of ophthalmology of the Long Island College Hospital.

This case report is offered on account of several points of special interest.

A male patient, sixty-four years of age, giving a history of having been unable to see with his left eye for one month, was seen at the Polhemus Clinic during January of this year. He presented the ophthalmoscopic picture of retinal detachment of the left eye, and was advised to enter the hospital for observation.

Several points in the patient's family and personal history may be mentioned: One sister died of diabetes at the age of fifty years. The patient was told last year that he himself had diabetes. He gave a negative history of lues and positive of gonococcus infection. He had had a prostatectomy done two years previously at a New York hospital; recovery had been uneventful; investigation revealed that the condition found was a nonmalignant adenoma. There were no respiratory, cardiac, or gastrointestinal symptoms, except a tendency to intestinal stasis. Appetite was good. History was negative for direct ocular trauma and for any violent physical exertion at the time of onset of the present condition.

General physical examination showed several bad teeth, negative sinuses, 0.2

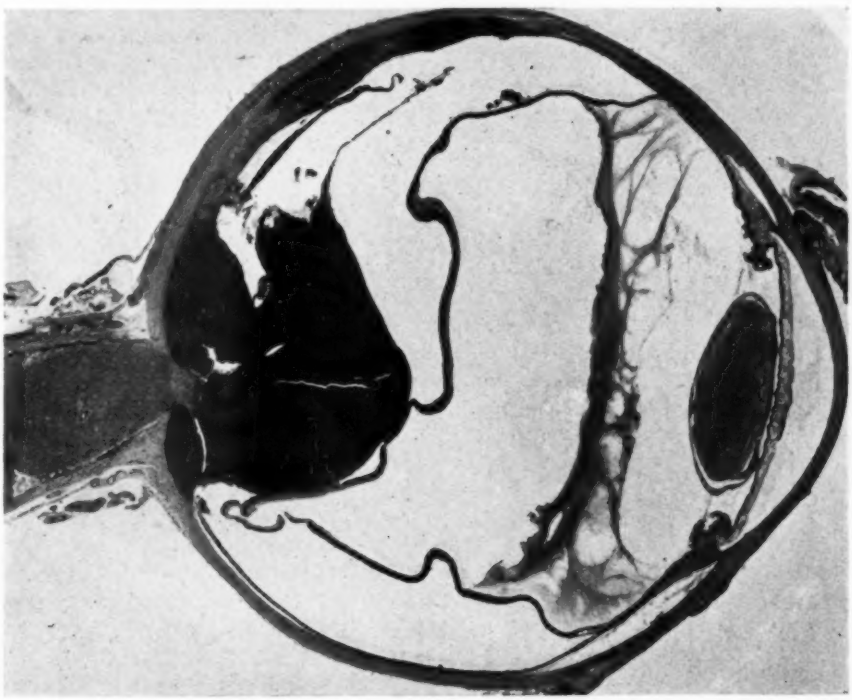

Fig. 1 (Freiman). Melanoma of the choroid, showing choroidal infiltration in addition to the main tumor mass.

sugar in the urine, blood sugar of 133, negative blood Wassermann, 4,000,000 red cells, 7,880 white cells, hemoglobin 74 percent, blood pressure 118/68 mm. The skin was somewhat mottled; no general glandular enlargement; a lipoma at the left elbow; some impairment of motion at the right apex; liver and spleen not felt; abdomen negative except for prostatectomy scar.

The vision of the right eye was 20/30; the intraocular picture essentially negative. The vision of the left eye was light perception. There was a retinal detachment occupying the inferior temporal quadrant, extending well down to the periphery. A smaller bulge nasally, separated from the other by a narrow sulcus, hid the disc area from view, and also extended well down and nasally. Judging by color, the detachment was not an old one. There seemed to be some change of fluid level on change of position.

Transillumination showed no definite obstruction to light transmission, though not entirely to be depended upon because of the high level of the detachment. A Schiøtz tonometric reading was 20 mm. in the good eye and 12 mm. in the affected eye.

The man was becoming somewhat impatient, and was permitted to leave the hospital at the end of the week. Though keeping in mind the strong possibility of a neoplasm, we were not as yet convinced of its presence but the patient was advised in general as to the serious nature of the condition. He was very reluctant to lose the eye, even though it was sightless, but finally consented to an attempt at removal of the subretinal fluid for whatever information of a more definite nature might be revealed.

He reentered the hospital two and a half weeks later: A scleral trephining was done in the lower temporal quadrant. A considerable amount of serous and serosanguineous fluid escaped through and around a hypodermic needle that was thrust into the subretinal space. Ophthalmoscopic examination while the patient was still on the operating table showed that the detachment field had only partially collapsed, and a well defined mass presented in the center of the field. Twenty-four hours later this mass appeared as a large domelike elevation, coming abruptly well forward, clearly defined, of a dirty-yellow color, with many vessels

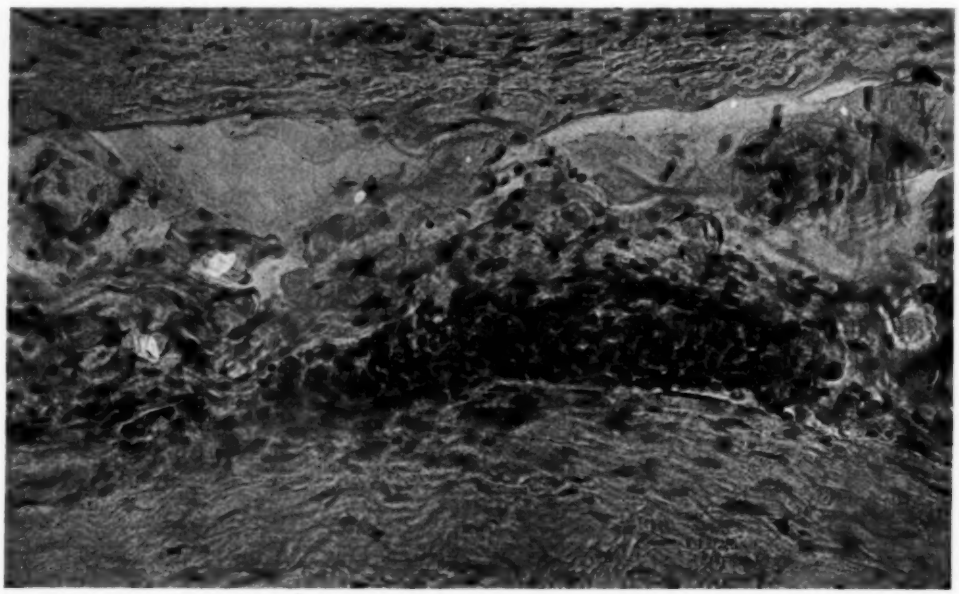

Fig. 2 (Freiman). Collection of suspicious cells in the vaginal sheath of the nerve.

coursing over its surface, and giving the impression of solidity. Temporally and nasally there had been a flattening of the retina.

Enucleation was advised and the patient consented. A physical check-up preparatory to general anesthesia showed a gradually rising elevation of the skin, with a fairly firm mass beneath, between the fifth rib and the costal margin on the right anterior chest wall. The raised area was slightly reddened at its center and was not movable; it gave the impression of being infiltrated into the underlying structures. The patient had been conscious of some discomfort and believed that he had been struck at this place a short time previously. Stereoscopic examination of the chest showed no cardiac, lung, diaphragmatic, or rib pathology. The surgical department expressed the opinion that the mass was probably a malignant sarcoma undergoing some degeneration, and felt inclined not to disturb it surgically.

Despite the presence of this mass, enucleation of the left eye was performed; without exenteration of the orbital tissues. By removing this one focus, it was hoped that the patient might be spared some of the distress that would be associated with its progressive growth. The department of pathology has kindly submitted the following report:

"Microscopically, a dense, very cellular tumor, containing considerable brownish black pigment and apparently arising from the choroid, occupies a position in front of the nerve head. It extends to a distance of 8 mm. into the vitreous chamber. The retina is detached. In addition to the main tumor mass the choroid has been infiltrated with tumor on one side. This infiltration of the choroid extends to a point midway between the anterior and posterior poles. In the vaginal sheath of the nerve several small collections of suspicious cells are encountered. These have no continuity with the main tumor, but their microscopic appearance strongly suggests that they may be tumor cells.

Diagnosis: Melanoma apparently arising from the choroid.

The orbit and the mass on the chest wall have had a series of x-ray exposures. Seven months have elapsed. The orbital tissues are smooth and show no evidence of growth at this time; the chest lesion has broken down and has been draining. Patient has a position that does not require a great deal of exertion and he is quite comfortable.

The presence of a choroidal tumor, associated with what is apparently a neoplasm on the chest-wall, which latter was, for conservative surgical reasons, not interfered with, suggests either multiple foci of malignancy, or a primary growth in the eye that had metastasized, or the reverse, the growth in the eye being secondary. Ball's latest textbook on ophthalmology observes that sarcomata of the choroid occur either primarily or by metastasis, although in the vast majority of cases the growth is primary (two cases being cited in which the primary growth was not ocular); the carcinomata, on the other hand, are always of metastatic origin.

"Metastatic growths occurring in connection with sarcoma of any part of the uveal tract are the result of transference of emboli of cells of the growth by the blood; the lymphatic glands connected with the eye do not become affected" (Collins and Mayou.) Quoting the same authorities further, it may be of interest to note the remarks that "patients who have had an eye removed for sarcoma of the uveal tract more often die of metastatic growth than of a recurrence in the orbit", and that "in the great majority of cases a patient with metastases succumbs to their effects within three years from the date of excision of the eye."

703 Grand street.

References

Ball, J. M. Modern ophthalmology, fifth edition, p. 609.
Collins and Mayou. Pathology and bacteriology of the eye, second edition, p. 193.

A SIMPLE INEXPENSIVE PHANTOM FOR HOLDING ENUCLEATED ANIMAL EYES WHEN DEMONSTRATING OPERATIONS ON THE GLOBE

JAMES M. PATTON, M.D., F.A.C.S.
OMAHA

The apparatus described serves very well for demonstrating the usual eye operations to groups of students; and may also be used for making comparative tests of tonometers.

Having experienced considerable difficulty in securing a suitable phantom for use in demonstrating the simple ocular operations to groups of students, I assembled the apparatus shown in figure 1. It can be made in a few minutes, and with the exception of the tube clamp (which can be secured from any laboratory supply company) the parts can be purchased from any dime store and should not cost more than seventy-five cents.

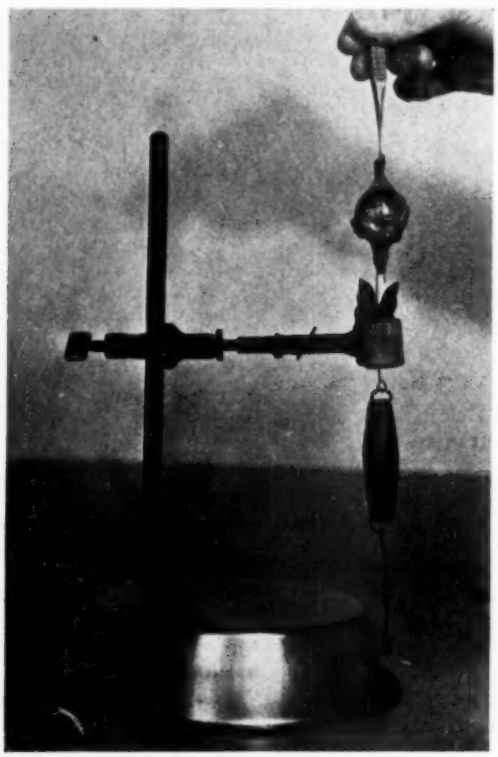

Fig. 1 (Patton). Eye holder assembled. Animal eye held away from socket to show method of inserting hook. Note position of wood screws to hold plaster of Paris or cement in pan. Also protruding screw-head to hold spring.

The parts in figure 2 are a tin or aluminum pan five to six inches across the top and one and a half to two inches deep, an iron bolt three-eighths inches thick by ten to twelve inches long, a candelabra socket of either type shown, a brass spiral bird cage spring (a one-eighth-inch rubber band answers as well but deteriorates quickly), three one-and-a-half-inch wood screws, sufficient plaster of Paris or sand and cement to fill the pan, and the tube clamp mentioned above.

To assemble, a hole is punched in the bottom of the pan from without inward, and enlarged with an artery clamp or closed scissors (or more workmanlike tools!) until the bolt can be inserted from within outward, with the head of the bolt inside the pan. Three

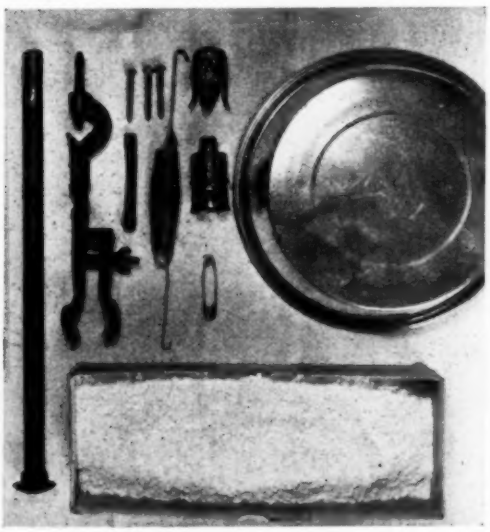

Fig. 2 (Patton). Showing pan, two types of socket, bird-cage spring with safety-pin hooks attached (rubber band and hook may be used), three wood screws, tube clamp, bolt, and plaster of Paris or cement and sand.

small holes are punched in the side of the pan to receive the screws. The screw opposite the bolt should protrude about one-eighth inch to act as an attachment for the spring or rubber band. With the bolt and screws in place, the pan is placed bottom up on the edge of a table and filled with properly mixed plaster of Paris or cement and sand, either of which will harden in a few hours. The bolt should be perpendicular to the bottom of the pan and the head imbedded in the plaster or cement.

In use, the apparatus is set up as shown in figure 1, the straightened safety pin or other connection, in the form of a hook bent on the sharp end and a loop on the other to connect with the spring, is passed up through the hole in the socket held by the tube clamp. The hook is then passed through the stump of the optic nerve or adjacent sclera, and the desired tension is secured by raising or lowering the clamp on the upright rod. Aside from its use as a phantom, the apparatus can be used for making comparative tests of tonometers. The intraocular tension of the animal eye can be regulated very accurately by slightly raising or lowering the clamp.

1620 Medical Arts building.

SOCIETY PROCEEDINGS

Edited by Dr. Lawrence T. Post

CHICAGO OPHTHALMOLOGICAL SOCIETY

December 16, 1929

Dr. Charles G. Darling, president

Ignipuncture in retinal detachment.

Dr. Harry S. Gradle read a paper on this subject published on page 304 of the April issue of this journal.

Discussion. Dr. Ramon Castroviejo said that in a recent paper on this subject he had noted some points to be considered. One was that the pupil must be fully dilated with atropin, provided the eye was not in a state of hypertension; the other, that the hole was often impossible to discover on account of the folds of the retina, as the hole might be behind one of the folds. The author allowed the patient to rest in bed for forty-eight hours, and observed that after this rest there was a much better possibility of finding the hole.

Dr. Peter Kronfeld had seen Lindner do this operation four times. Two cases were doing well, and there was actual improvement in about fifty percent of the cases.

Dr. George F. Suker said that he was quite enthusiastic about this method, and agreed with Dr. Gradle that it had given better results than other operations. He agreed also that the retinitis was not the primary cause of detachment but a subsequent finding. In an operation done at the County Hospital that afternoon for complete detachment, for the second time, he was unable to locate any hole. He cauterized at the lower temperal quadrant and punctured the sclera and struck the retina, and with the cautery succeeded in getting attachment at the lower pole. The upper area was then cauterized, and it was possible that an attachment would be secured there. He had shown some months ago a case in which reattachment had been obtained by this method. It was still holding. His experience had been that, even though reattachment was secured, there was likelihood of a detachment occurring elsewhere because of the excessive irritation, sometimes in the opposite angle, in which case it was necessary to operate again or to wait for absorption.

In a case where attachment was not readily secured, it was necessary to operate and to make a puncture and then proceed to cauterize. Almost certain results could be obtained by a trephining, puncturing the retina, and extracting the subretinal fluid. Unless the cautery was properly heated, one was likely to get vitreous opacity. So far as functional result was concerned, a large portion of the retina was destroyed by heat.

Dr. Robert Von der Heydt showed stereophotographs of four cases of detachment of the retina in which the photographs showed the hole in the detachment. He remarked that if it was so easy to photograph these holes it should be quite possible to find them with the ophthalmoscope. Gonin operated only if he found the hole.

Activities in ophthalmology in the Red Cross Hospital of Madrid.

Dr. Francesco Poyales, of Madrid, Spain, said that in presenting these motion pictures and slides his idea was merely to show something of what was being done at the Red Cross Hospital of Madrid. The new hospital, which had been in use for one year, had been designed on the most modern and scientific lines. In its planning and management, Her Majesty Queen Victoria of Spain had been most interested, and, together with her daughter, the Princess Beatrix, she had been untiring in her personal effort and enthusiasm. The latter had served in the hospital as a nurse, in common with a number of other young women from the most aristocratic Spanish families, no distinction being drawn between these and

other nurses except that they received no remuneration. These young women were fully trained in the examination of patients and were qualified to assist in research work, and with their help it was possible to accomplish a great deal of detailed research which would otherwise have been practically impossible because of lack of trained assistants.

The moving pictures showed some of the work being accomplished at the hospital; cataract operations done by various methods, the work being handled in the laboratories, and so on. One experiment of particular interest was the injection of sodium iodide into the large arterial branches of living subjects, with subsequent radiography. In the large branches this had been successful, and it was hoped that radiographs might also be made of the smallest arterial extremities and of the sense organs.

Dr. Robert Von der Heydt showed several autochrome stereophotographs of the anterior segment of the eyeball. These were made with Agfa autochrome plates.

ROBERT VON DER HEYDT,
Secretary.

CHICAGO OPHTHALMOLOGICAL SOCIETY

January 20, 1930

DR. CHARLES G. DARLING, president

Pathology of the eye

DR. S. HANFORD MCKEE, of Montreal, Canada, as honor guest of the Society, gave a talk illustrated with many lantern slides. In discussion of sarcoma of the uveal tract he said that Fuchs had collected 91 cases in 137,545 eye cases, or 0.066 percent. A number of specimens were shown to emphasize its occurrence in early life. One case occurred in a girl of fourteen years, another in a young woman of twenty-one years. These were both sarcomas of the choroid. A case of sarcoma of the ciliary body was also shown. The details of a case of melanotic sarcoma of the conjunctiva were given, and the specimen shown. Endogenous inflammations of the eye which occurred in the course of sepsis and other infectious diseases were dealt with, also a case of rodent ulcer in a female of twenty-seven years which had been present for the last two years at the outer side of her right lower lid. The details of a case of retinitis pigmentosa with pathological findings were given, also the details of three cases of sympathetic ophthalmia, all of which ran a very malignant course, but finally reacted to large doses of salicylate of soda and three percent atropin. A short historical note on amaurotic family idiocy was given, with the pathological findings in a case seen at the Montreal General Hospital. The typical degeneration of the ganglion cells and nerve fiber layer was seen. The ganglion cells showed a marked increase in size, they were round and had lost their dendritic processes. The nuclei were comparatively small and occupied an eccentric position, in many instances resting against the cell border. The cytoplasm had a coarse granular appearance, and definite vacuoles, occupying about one-half the cell space, were demonstrated in some of the cells. Ophthalmia neonatorum caused by inclusion bodies was discussed, also phagocytosis by the epithelial cells of both the conjunctiva and cornea. Dural endothelioma was described in considerable detail.

ROBERT VON DER HEYDT,
Secretary.

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Section on Ophthalmology

January 16, 1930

DR. H. MAXWELL LANGDON, chairman

Iridectomy in bullous keratitis

DR. WILLIAM ZENTMAYER presented a case of relapsing bullous keratitis in a man of sixty-eight years. After the condition was of about one year's duration, an iridectomy was done, which had apparently resulted in a cure as no

recurrences had taken place in eight months, and the eye was functioning normally with a visual acuity of 6/15.

For six months previously the patient had attended regularly one clinic where the usual procedures, including radiation therapy and the thermophore, had been used without benefit. The etiology was obscure. The only possible contributing cause was an ethmoiditis for which an operation had been successfully done early in the eye disturbance. Aside from the relapsing bullæ with the accompanying severe subjective symptoms, temporary slight increase in tension, and an alteration in the anterior lens capsule, the eye was normal.

Discussion. Dr. Cowan said he had seen this man at the Wills Hospital quite a while before Dr. Zentmayer had seen him. Dr. Cowan was very much interested because the patient presented the same condition as that which he and Dr. Holloway had shown some time before at the Section. There was a bluish-white punctate deposit on the anterior surface of the lens forming a sort of lace-work design. The ragged edges extended forward into the anterior chamber. At present there was a difference of opinion as to the etiology of these cases.

The same type of case had been illustrated by Bedell in the Jackson Birthday volume. Dr. Bedell called it a proliferation of the superficial layers of the lens capsule. Vogt, in his atlas, illustrated the same condition and considered it a peculiar form of retained pupillary membrane. He pointed out that the design roughly outlined the arrangement of vessels of the tunica vasculosa lentis. Drs. Holloway and Cowan, agreeing with Vogt, had presented their case as one of persistent pupillary membrane. Vogt had reported several other cases of the same kind since then, but now considered the exudate to be due to a degeneration of the superficial lens capsule. Meesmann, in his atlas, illustrated the same condition and agreed with Vogt. Kraupa included these cases with glass-blower's cataract, and believed that the exudate was due to a granular degeneration of the capsular lamella. Schieck considered the exudate to be a deposit of cells from the posterior surface of the iris.

The first case that Dr. Cowan saw was one of Dr. Ring's. Shortly after this a case was seen at the university, and then there was the case shown tonight, all within a very short period of time. He thought these cases were much more common than was supposed. They always occurred in elderly people, with other degenerative changes and very often with glaucoma. The patient of Drs. Holloway and Cowan had developed glaucoma a very few days after he was shown.

Dr. Griscom said that some years ago he had reported before the Pennsylvania State Medical Society a case of bullous keratitis in which the history was quite similar to Dr. Zentmayer's. The patient was a lady aged about sixty years, who came to the Wills Hospital with recurrent bullæ of the cornea, which repeatedly ruptured and reformed, accompanied by intense pain. There was a rise of tension in this case, but no other evidence of ocular disease aside from the bullæ.

All efforts to relieve the patient, including iridectomy, were of no avail, and it was finally decided that the eye should be enucleated because of the intense pain. In the course of the examination prior to this operation, it was discovered that she had an active ethmoiditis. This was treated and, whether because of this treatment or not, the bullæ ceased to form and the eye remained quiet.

Dr. Griscom referred to the above history because after one and a half years this patient had returned to the hospital with a similar condition in the other eye. In spite of all treatment, including treatment of the ethmoids, which were not actively diseased at that time, she continued to have repeated attacks. She finally became discouraged and disappeared.

Dr. de Schweinitz, after congratu-

lating Dr. Zentmayer on the admirable operative result he had achieved, related briefly the case history of a young Hebrew man, who, long the subject of relapsing bullous keratitis which had resisted all the usual nonoperative procedures, was finally cured when, an unusually large bulla having formed, all the loosened epithelial layer was removed, and the exposed surface painted with a 1 to 20 solution of trichloracetic acid, especially applied along the edge of the ulceration.

No definite cause for the formation of these large bullæ was discovered. The patient was highly myopic and dwelt in a malarial region, and had frequently received full doses of quinine, but prior to the cauterization described treatment had had no salutary influence on the keratitis. The slight corneal haze which remained caused no noteworthy visual inconvenience.

Dr. Zentmayer, in closing, said Dr. Buchanan had brought up the question of malaria as a cause of the bullous keratitis. Dr. Zentmayer's patient had stated that many years ago he had had a "touch of malaria", but this seemed too long ago to have any bearing on the etiology of the corneal condition.

A case of electric cataract

Dr. Holloway presented the history of a boy who had been subjected to a shock from an electric wire carrying 2,200 volts. As far as could be ascertained, inflammatory signs had never been present. Failure of vision was first noted nineteen months after the injury, and when the patient was first seen by Dr. Holloway ten months later, or twenty-nine months after the accident, there was a complete opacification of each lens. There was a small central capsular plaque on each cataract. Following iridectomy and evacuation of the lens, the patient had 6/12 vision with the right eye and 6/6 with the left. No demonstrable fundus lesions were present in either eye.

Dr. Holloway, in closing, said that he had intentionally avoided saying anything about the pathogenesis of this type of cataract, as he hoped some of the men interested in biochemistry and pathology would discuss this point. As far as he knew it was probable that the observations of Hess were those generally accepted. This observer had found that subsequent to an electric discharge there occurred a distortion of the capsular epithelium with accumulation of fluid between the capsule and the lens fibers.

Adenocarcinoma of conjunctiva

Dr. Edward B. Spaeth reported a case in which the growth was of at least one year's duration, and in the past few weeks had been showing a very rapid increase in its size, the greatest part of its present size having been reached in the past three weeks. The tumor mass at first examination extended from the limbus, where it had grown over upon the cornea for about two millimeters, toward the outer canthus for a bit more than three-fourths of the scleral surface, and its width was slightly more than that of the normal palpebral fissure. It was elevated at its highest point for several millimeters, multi-lobed, soft, and with a very copious blood supply. It was firmly adherent to the underlying sclera.

The limbus was the most common site for epibulbar carcinomata. In this case there was, therefore, nothing unusual as to position. Also epibulbar carcinomata as a rule responded rather readily to radium treatment. They were fairly rapid in their growth. Adherence to the underlying tissues occurred late in the course, and because of the resistant sclera they would usually extend completely around the limbus before penetration took place. In this case there were a few points of difference from these usual features. These were the very slow growth, the penetration to the underlying tissues, the very copious blood supply, the brown granules of pigment scattered throughout the tumor mass, and the unusual resistance to radium therapy. Radium had been applied by conjuncti-

val contact three times at intervals of two weeks, with but little change in size or appearance of the growth. Ten days after the third application the tumor was resected from the sclera by actual cautery. A fourth radium application was done the same day. The case then went on to uneventful recovery and had remained so for six months.

Judging from the age of the case with its rapid growth, it was possible that it had started originally as an epithelial plaque, a benign adenoma starting from glands of a rudimentary acinotubular character or from a nonpigmented mole. The late sudden growth would indicate the time at which malignancy developed. This was also consistent with the pathological report made upon the sections. An incipient cataract had remained unchanged throughout the course of this treatment. Vision was still 6/5 with correction.

A method of uncovering latent hyperphoria

Dr. Leighton F. Appleman presented a method which consisted essentially of three steps. First, with a Maddox rod the muscle balance was tested at a distance of six meters. This revealed the manifest error at this distance. If a deviation from the normal was present, a prism was placed before the eye in such a manner as to obtain equilibrium. Second, the patient was given a card on which was the dot-and-line of Graefe. He was told to hold this at the reading point, with the line horizontal in testing for hyperphoria. A twenty-degree prism was then held in front of one eye, with its base toward the nose. Lateral diplopia was thus produced, and if no hyperphoria was present the images would be on the same horizontal plane. Should one be higher than the other a prism of sufficient strength was placed before one eye to bring the images upon the same horizontal plane. Third, leaving this prism on, the patient was told to look at the point of light six meters distant. The Maddox rod was again used, and if the patient now showed an overcorrection the strength of the prism was reduced by half degrees until the eyes were again in equilibrium. This constituted the second distance estimation. The difference between this and the amount shown by the first test constituted the amount of latent deviation. In an analysis of 500 cases, there were 253 in which primarily no hyperphoria was shown but in which from 0.75 to 3 degrees were uncovered by means of this method of testing. In the remainder, while a low degree of deviation was found at the first test, considerably more was revealed as latent.

Incorporation of these findings in the lenses for constant wear produced gratifying relief of symptoms for which the patients sought relief.

Discussion. Dr. Zentmayer said the objection that came to his mind was as to the high prism used, since the slightest angulation of the prism might produce this apparently latent hyperphoria; but he supposed care was taken to see that this did not occur. Although he did not wish to put his opinion above that of Mr. Maddox, supported by Dr. Appleman, that the correction of hyperphoria reduced the amount of lateral deviation, in his experience it had no such effect. In his opinion the correction of hyperphoria under two degrees was rarely necessary. He considered that where the refraction was thoroughly done it was seldom necessary to give special attention to the correction of a low degree of hyperphoria.

Dr. de Schweinitz said he was entirely convinced that the prismatic correction of hyperphoria represented a highly important therapeutic procedure, and often, moreover, when the hyperphoria was of small degree, and when the most accurate correction of the refractive error had failed to achieve the desired result. In his experience and that of his associate, Dr. Fewell, when the hyperphoria was latent the Marlow method of uncovering was a most satisfactory one. Having

had no experience with Dr. Appleman's technique, he was unable to discuss it in relation to that advised by Marlow.

He referred to the fact, historically interesting, that the late Dr. E. O. Shakespeare had corrected hyperphoria with prisms at a period long antedating the well-known studies of the late Dr. George Stevens. He was not sure, however, whether Dr. Shakespeare had placed his cases on record.

Dr. Holloway said that he had used Dr. Appleman's routine in several instances and had found that his results were similar to those obtained by Dr. Appleman. As far as a prism was concerned it was not necessary to use so high a prism as had been suggested. He felt that the test was essentially a fogging of the muscle, in the same sense that this word was used in a refraction case. He thought that all clinicians obtained satisfactory results from the use of vertical prisms, but occasionally one obtained just as satisfactory a result from taking off a prism that had been previously prescribed.

He considered the Marlow test a distinct acquisition to the methods of treatment for muscle imbalance, and he generally used it for several days. One of the most grateful patients he had was one who has been wearing a vertical prism placed in the wrong direction, the error being uncovered by the Marlow test.

Dr. Fewell said in regard to the Marlow test that patients did object to wearing a bandage over an eye, but that, in patients who were already wearing glasses, by making one glass frosted he had seen 0.25 degree of hyperphoria change to one or two degrees after wearing the frosted glass for one or two days. Patients would not object so much to the frosted glass as they would to the bandage.

Dr. Langdon said that, in the case which Dr. de Schweinitz referred to as having been seen in consultation with him, a frosted glass was tried for a week, and for the next week a tight bandage over the eye was worn constantly during the waking hours. The patient found the bandage much more comfortable and less annoying than the frosted glass, and incidentally a hyperphoria of three and one-half degrees was developed, where less than one degree had been noted previously.

Dr. Carpenter said that he at least had had the privilege of looking back over a good many years of ophthalmic practice, and that he was rather astonished to find that agreement had not been reached as to the prism for vertical muscle deviation. He believed that every eye which, properly examined, showed a relatively high defect, should be corrected by vertical prisms even in addition to a most perfect correction of the refractive error.

He said that there were some people who had such splendid nervous systems that they could go with uncorrected hyperphoria, or with hyperopic astigmatism with fifteen degrees or more of faulty placement of the cylinder, and come back and sing the doctor's praises. He had met one of these patients who had five degrees of left hyperphoria. He ordered prisms two and one-half degrees base up for the right eye and two and one-half degrees base down for the left. The patient was a very busy lawyer and did not return to him for two weeks, when he found that the prism ordered two and one-half degrees base down was placed base up, and yet the patient was delighted with the result.

Dr. Appleman, in closing, said that he thought the reason there was not more unity of opinion as to the value of prescribing vertical prisms was that the majority of examiners had not a definite method for uncovering these errors. While there were many different methods of estimating the muscle balance, and while it was probably true that some would get results by using one method or another, he felt that every one should stick to some one method by which these latent defects might be uncovered and corrected as part of each examination.

He stated that he had been led to a recognition of the importance of cor-

recting low degrees of hyperphoria in the course of the examination of many medical students who at a first examination took a certain correction and wore it comfortably for a year, after which time they began again to have discomfort, and upon examination under exactly similar conditions showed exactly similar refractive errors as found the year previously, except that a low degree of hyperphoria was uncovered. The prescribing of a vertical prism as low as 0.5 degree had enabled them to go on with the second year's work with perfect comfort.

In regard to the lateral deviations, it had been his experience that, aside from the need for convergence training by means of prism exercises, the lateral deviation usually took care of itself.

As for the strength of prism used to obtain lateral diplopia in testing at the near point, while he had mentioned that he used a twenty-degree prism, it was not necessary to use one this strong provided diplopia was produced, but it was with this strength that he had been accustomed to work.

A. G. FEWELL,
Secretary

ROYAL SOCIETY OF MEDICINE, LONDON

Section of Ophthalmology

January 10, 1930

MR. CYRIL H. WALKER, president

Melanotic sarcoma of the choroid

MR. MCCALLAN showed a man, aged thirty-seven years, who had come under his notice three days after observing that the right eye was defective. Vision in that eye was no more than perception of hand movements. In the fellow eye the vision was 6/5. The eye, having been excised, was exhibited. The neoplasm occupied the ciliary region, and was seen to be stretching backward toward the optic disc. The suggestion had been advanced that it might be cysticercus, as the man had resided in several places abroad and had suffered from several tropical diseases. A further suggestion had been that it might be sarcoma of the choroid. The blood revealed no eosinophilia, and a thorough examination of the stools did not reveal parasites or eggs in the intestinal contents. Routine radiography showed a root abscess in the right upper jaw, and two apical dental abscesses. On dental advice the mouth was cleared. Tonometric measurement gave a reading of 16, and in the good eye of 22 mm.

Eleven days after the patient was first seen the speaker thought there was a fuller aspect about the tumor, and there was a torpedo-shaped retinal hemorrhage placed horizontally. He therefore removed the eye. The growth was found to be melanotic sarcoma. The pathologist reported that it was a circumscribed sarcoma, slightly pigmented in parts, and probably arising in the outer layers of the choroid. There were spindle cells. There was no evidence of extraocular extension through the usual channels. The angles of the anterior chamber were free.

Persistent hyaloid canal

MISS SMITH CLARKE showed a patient who had been a premature child, born at eight months and one week. The boy was strong. The unaffected eye showed a slight trace of hyaloid canal. There was vision of 6/6, and very little refractive error.

Semitranslucent fibers radiating from the disc

MISS ADAMS and MR. WILLIAMSON-NOBLE showed a man aged fifty-five years, who complained of defective vision in the right eye. There was no scotoma corresponding to the fibers. The fibers did not originate from the edge of the disc.

Influence of the parafoveal on the foveal region

MR. F. W. EDRIDGE-GREEN gave a demonstration which constituted, he

considered, a conclusive proof of the accuracy of his theory of vision, which was that the rods were the nerve elements which controlled the visual substance. This visual substance was liberated into the liquid surrounding the cones, and was flowing all the time, except during sleep, toward the center and out through the optic nerve. He had advanced that theory in 1889, and facts supporting it had been increasing ever since. The fovea contained only cones, therefore the foveal region had to be sensitized from the periphery. By glancing up after looking directly at a bright light one saw circles contracting and breaking up into a star figure. That explained the observation which Helmholtz was unable to give a reason for, that at one moment the fovea was blind, and at another moment it was the most sensitive part of the retina. If, on awakening in the morning, one looked at the ceiling, a black spot was seen, but on waiting with the eyes under the bedclothes until one of the circles had broken up one saw the fovea as a dazzling star. The speaker placed a black object two inches in diameter in the middle of an area of red, on the epidiascope, and invited the members to fix it with one eye during such a period that the black object became merged in the area of red, and so was apparently obliterated. In asking that only one eye be used he was anticipating an obvious criticism that if both eyes were used the occurrence might be attributed to convergence, and that was impossible with the use of only one eye. Placed on a patterned carpet such a dark object appeared, after gazing, to be transparent. The colors from the periphery had flown over into the fovea. If one placed red on green, one saw a flowing in of the spiral wave, and where the green impinged on the red, the red changed to yellow before the whole of the green was entirely obliterated. A dimmer light than daylight was better for those who had difficulty in seeing the effect.

Discussion. Several members suggested that the effect was due to a mental impression, but Mr. Edridge-Green replied that it could not be so, as one could not have anything moving in the cerebrum. He added that when the eye was moved, the muscles of the eye put pressure on the retina and drove the fluid in an irregular way. That was his explanation of miners' nystagmus: when faced with the black surface of coal the visual purple did not flow in properly, and in order to secure that flow the eye was moved.

Microphthalmic family

MR. EUGENE WOLFF said the parents of this family were first cousins, their mothers having been sisters. There were now ten children of the family alive, five of whom had small eyes (three male, two female). The children so affected were the first, third, fourth, eighth, and tenth. In most of the cases of microphthalmos on record there was an additional malformation, such as cataract, or coloboma of the iris and choroid, and often these combined with nystagmus. Most had poor vision, even with correction. In the present family, however, the small eyes were the sole defects. The members of the family were all highly hypermetropic, with but little astigmatism, and at one time they had reasonably good vision. There was some ptosis associated with narrow palpebral fissures and small orbits. The eyes were deeply set, so that the lower orbital margin, which normally formed no prominence, was visible.

It was not easy to decide when to call an eye microphthalmic, as all sizes were encountered. It was not possible to measure the anteroposterior diameter of the eyeball, and the size of the cornea was not an absolute indication. In the cases in this family the cornea measured about ten millimeters in transverse diameter.

Priestley Smith had pointed out that these cases were more liable than others to glaucoma, because the rule was for the lens to be too large. In eyes which were smaller still, the lens was usually cataractous and small; prob-

ably in this way the eyes were saved from glaucoma. Priestley Smith had reported the case of a man with abnormally small eyeballs with clear lenses who had suffered from primary glaucoma, and whose daughter years later presented a similar maldevelopment with increased tension.

The eyes Mr. Wolff was now describing were not enophthalmic, as was almost always the case. In that state, though the eyes were small, their refraction was emmetropic and they were infantile. Treacher Collins had pointed out in 1899 that the diameter of the cornea in intrauterine life was more than half of the whole eye, while in the adult it was less.

The premature baby in this family, the fourth child, was the most seriously affected. The unaffected brothers and sisters were married and had normal children except that one had epileptic fits. None of the members of this family showed corectopia to any degree. Kotelmann had found that the position of the pupil tended to vary with the race, and that in Patagonians it was normal to find ectopia pupillæ upward and inward.

Dr. E. A. Cockayne had shown him the following quotation from Charles Darwin's "Animals and plants under domestication": "In all cases of double microphthalmia brought under his notice he has at the same time met with defective development of the dental system." Three members of the family Mr. Wolff was now speaking of had only two upper incisors. The eighth child was said to have a supernumerary row of teeth.

Two hypotheses had been advanced to account for microphthalmos, one developmental, the other inflammatory. Possibly in this family the consanguinity of the parents might have been an excitant to arrest of development. In certain cases syphilis had been blamed. There was no evidence of that disease in this family.

As to the second theory, the inflammation might be in either the parent or the affected child.

Krukenberg's spindle

Mr. J. D. N. Cardell read a paper based on the case of a man who was myopic and received a blow on the left eye. There followed an opacity on the back of each cornea. These opacities were oval in shape, 2.5 mm. in size, and a rusty brown in color. There was no persistent pupillary membrane, nor sign of iritis. The fundi were normal. Pigment was circulating in the anterior chamber of the left eye only. The only change which had occurred at the end of five weeks was that the circulation of pigment had ceased in the left eye. Since then this patient had been lost sight of.

Since 1899 details of thirty-one cases of the kind had been published. Seventy-one and four-tenths percent of these were females, and the average age of the patients was forty-six years. In 93.8 percent of the cases the condition was bilateral. In 26.7 percent there were other congenital defects, while in 20 percent there was an associated inflammation. It was not yet agreed whether the condition was congenital or acquired. The speaker entered into a discussion of the point.

Discussion. Mr. Gray Clegg showed pictures of two cases of the kind which had been under his own care. The first patient had chronic glaucoma, and there was decided atrophy of the iris. One could see the pigment particles on the atrophic iris. The other patient also had chronic glaucoma. On this case he had done a large peripheral iridectomy, after the method of David Little. To the right the distribution of the pigment particles was sharply defined, while to the left they shaded gradually off. He thought it might be a gravitational effect, but found that the patient slept on his right side.

Mr. Charles Goulden did not think these cases were so rare as was usually supposed. In the cases he had seen the aggregation of pigment did not reach to the angle of the anterior chamber, it extended no higher than the middle of the pupil. He thought the depo-

sition of the pigment in this way was due to convection currents in the aqueous. An earlier observation consisted of the injection of fluorescein into a vein in the ear of a rabbit, after which it was seen in a line on the back of the cornea, in the position of a Krukenberg spindle.

(Reported by H. Dickinson).

NASHVILLE ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

January 20, 1930

Dr. R. J. Warner, chairman

Oculoglandular tularemia

Dr. Robert Sullivan said that in the autumn of 1913 Dr. Vail senior had reported the first case of oculoglandular tularemia in man. The case was so diagnosed and proved by laboratory methods, by which the bacillus tularense was isolated. Since that time about thirty-five undoubted cases had been seen. The right eye was affected in twelve cases, the left in nineteen, and both eyes in four. Thirty-one males and four females were affected, the ages being from seven to seventy-two years. The sources of infection were rabbits, ticks, and flies. Types of lesions found were small yellow ulcers, papules, and boggy or thickened conjunctiva. There were two cases of iritis and there was corneal involvement with perforation in one case. The size of the ulcers varied from two to six millimeters. The number of ulcers ranged from one to ten.

The lower conjunctiva had more of the lesions, usually in the area of the tarsus. The duration had been from two to eight weeks. The glands involved were: preauricular, cervical parotid, and submaxillary. These frequently had suppurated and had had to be incised. The glandular involvement came on simultaneously with the eye condition. Temperature was of intermittent type, from 100 to 104 degrees, lasting from one to six weeks. The discharge was seromucous, mucoid, muco-watery, mucopurulent, or purulent.

J.A., aged fifteen years, was seen December 18, 1929. After handling rabbits for a groceryman and not infrequently rubbing his eyes, he noticed an uncomfortable feeling about the right eye, with itching and burning followed by redness and swelling with seromucous discharge. There had been a feeling of general malaise, loss of appetite, and aching and swelling under the jaw.

Examination. Right eye: Lids swollen and edematous, with seromucous discharge. On the palpebral conjunctiva were small yellow discrete ulcers, deeply situated in chemotic conjunctiva as described by Dr. Vail. "They looked like yellow polka dots in a piece of calico." The palpebral conjunctiva was extremely red, the congestion diminishing as it approached the ocular portion. The lower lid when everted revealed six small discrete ulcers of the palpebral conjunctiva, with yellow necrotic plugs and indurated margins. There was one lesion above. The cornea was clear. Vision was 20/20. Left eye, negative. The patient looked sick. Temperature was 103 degrees. The preauricular gland and regional glands were enormously swollen. There was no suppuration. Blood taken for examination was reported negative.

On January 2nd blood was again taken and was found to agglutinate. This was examined by Drs. Jones and Litterer. The diagnosis was made on typical clinical symptoms and positive findings, both from the appearance of the eye and from the laboratory test. The patient had gradually improved, and was able to be up. The eye symptoms were improved, with ulcers almost healed. Temperature was normal but the glands were still very large.

Treatment had been general supportive, with mercurochrome one percent and hot applications of boric acid used locally. There was no specific treatment.

Discussion. Dr. W. W. Wilkerson asked if it was possible to differentiate

Parinaud's conjunctivitis from tularemia conjunctivitis in its early stages, from a clinical standpoint.

Dr. W. G. Kennon said it was always interesting to look backward. When he was a hospital interne, he had seen a similar case in a doctor. He felt sure now that the doctor had had oculoglandular tularemia. The glands did not break down, and there were ulcers with perforation of the cornea, so that the final diagnosis was Parinaud's.

Dr. Herschell Ezell said he believed that he had seen two cases of oculoglandular tularemia in the last two years. In both cases the diagnosis was confirmed by laboratory findings. One presented no glandular involvement, while the other was a typical case.

Dr. Robert Warner remarked that he had seen Dr. Sullivan's case about two weeks ago when it was at its height. There were ulcers of the lower palpebral conjunctiva.

Dr. Robert Sullivan, in closing, said that Dr. Vail had written an exhaustive study on the differential diagnosis in the Archives of Ophthalmology.

W. W. Wilkerson, Jr.,
Secretary

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THE DIAGNOSIS OF ACUTE IRITIS

With a history of exposure to cold, a patient may come with lacrimation, photophobia, the eyeball reddened by conjunctival congestion, and the belief that he has "caught cold in the eye." There may be no pericorneal zone of deep redness, the pupil may be active and the iris of good color. Often in such an eye the disturbance is confined to the conjunctiva and the surface of the cornea. But the physician should not, even in his own mind, commit himself entirely to the diagnosis of conjunctivitis. In most cases it is only conjunctivitis, but in a few there is also a deeper inflammation. Next day there may be a pericorneal zone of redness, a discolored iris, and a sluggish pupil, although pupillary adhesions and severe pain may only come later. The diagnosis between acute conjunctivitis and iritis cannot always be made at first glance. In either condition a mild purgative, rest, and light diet will be helpful; and inspection of the eye next day will give a better basis for the diagnosis and treatment.

Keratitis may give a pericorneal zone of redness, as distinct as that of iritis. It should be thought of, and corneal opacities and irregularities of surface carefully looked for. Even when the cornea looks clear and smooth, it may not be normal, but may have started to become "inflamed". Mild cases of snow blindness, or sunburn in the early spring, may show a cornea normal in appearance. On the other hand, irritation in an eye with old corneal scars and irregularities is easily ascribed to keratitis, when the condition is really one of acute iritis. Even the recent haze of cornea and aqueous or the deposits on the posterior surface of the cornea that have come with iritis may mask the changes in the iris, or may be misinterpreted as signs of keratitis. The pericorneal zone holds the nutritive

supply of both cornea and iris, and, the close relation between the structures must not be forgotten.

Cases of glaucoma mistaken for iritis and treated with atropin occur, and sometimes go on to blindness. The possibility of glaucoma should be considered before putting atropin in any inflamed eye. But the opposite mistake is possible. In iritis the first evidence of congestion of the iris may be a sluggish contraction of the pupil, that causes it to appear dilated and suggests glaucoma. In a few cases the instillation of eserin in such an eye has caused very severe pain, and has increased the severity of the inflammation. Danger of this is not eliminated by the use of the tonometer. The tonometer verifies any increase of tension, and may lead to the use of a miotic when a mydriatic is needed. In a woman of seventy years, the tension of the eye was 52 mm. of mercury. Under atropin the tension came down to 24 mm., and the patient lived to be seventy-seven years old without any other symptom of glaucoma. A younger woman had intraocular tension of 60 mm., but showed uveitis. She was treated with mydriatics, and has since lived fifteen years without symptoms of increased tension.

When the presence of iritis has been established, the diagnosis is only well begun. The attack may be caused by one or more of several extraocular conditions; and the discovery and treatment of the cause is often the most important service that can be rendered to the patient. Iritis may come by extension of inflammation from neighboring parts, or by trauma to the eye, as contusion without any visible external injury. But more frequently it is due to some general disease or affection of a distant organ. Failure to search out and remedy the distant cause may nullify all local treatment, and may allow an acute iritis to become chronic or recurrent, with the dangers to the eye that such inflammations entail, including closure of the pupil, or glaucoma.

The long known causes of chronic iritis, syphilis, rheumatism, gout, and tuberculosis, generally begin with an acute attack. The same is true of the focal infections, now recognized as causes of many disturbances formerly classed as "rheumatic". These must not be ignored in connection with any acute attack; and there are other causes that are less common, but just as important to remember. An iritis which is at first acute may be brought on by chronic constipation with absorption of intestinal toxins, by diabetes, or by arthritis deformans. Infective jaundice due to a spirochete is often marked by uveitis. Ophthalmic herpes zoster may cause it. The acute contagious fevers may be followed by it. The search for the real cause of an acute iritis often needs to be long and difficult. But it is worth making, both to cure the attack and to prevent its sequels and recurrence. The first scientific meeting of the Association for Research in Ophthalmology, to be held at Detroit, June 24th, is to be devoted to the etiology of acute iritis. The more we learn of the etiology the more thorough can be our search for the diagnosis of iritis.

Edward Jackson.

INSTRUCTION OF OPHTHALMIC HOSPITAL RESIDENTS

In the various Chicago hospitals and clinics there are some twenty-two residents in ophthalmology. By "resident" is meant a medical graduate who has served an interneship in a general hospital and is now serving a further interneship in an exclusively ophthalmic service. Such a service is usually for the period of one year.

The resident examines and makes a careful description of the eyes of all cases that enter the hospital on the ophthalmic service, and follows the cases until discharge. He assists at operations, and eventually is given some operative work to do under the supervision of the attending surgeon. He either does the postoperative dressing or personally assists the attending man in that duty. In his spare time,

the resident works in the out-patient department or in the laboratory of histopathology. "Between times", he is further supposed to read systematically and to attend the miscellaneous cases on hand. (Apart from that he has nothing to do but eat and sleep!!)

This régime is all very well for clinical training; but there must be a foundation upon which that clinical training is reared. In the majority of clinics and hospitals, such foundation is apt to be weak. Realizing that fact, the following ophthalmic clinics in Chicago have joined forces for the better training of residents: University of Chicago, Rush Medical College, Northwestern University, University of Illinois, Loyola Medical College, Cook County Hospital, Illinois Charitable Eye and Ear Infirmary, Saint Luke's Hospital, and Michael Reese Hospital. A committee was appointed consisting of Drs. T. D. Allen, S. R. Gifford, and R. W. Gamble (secretary), and this committee has formulated a curriculum for the instruction of residents in the elements of ophthalmology. The work is to be given two evenings a week and will extend over a period of six months. Some twenty-five members of the staffs of the various institutions interested will present the instruction, thus not throwing an undue burden of teaching upon any one individual.

The following is a résumé of the course which has been planned:

Gross and microscopic anatomy of the eye and orbit	8 hours
Embryology of the eye and postnatal development	12 hours
Anatomy of the central visual pathways and neuromuscular apparatus	7 hours
General physiology of the eye	6 hours
Routine of inspection and examination of the eye	1 hour
Physiological optics	9 hours
Principles of refraction	5 hours
Principles of perimetry	4 hours
Bacteriology of the eye	2 hours
Muscles	6 hours
Principles of the slit-lamp	6 hours
Use of the library	2 hours
Histopathology of the eye	32 hours
Ophthalmological ethics	1 hour
Total	101 hours

It will be noted that the subjects, in so far as possible, are not clinical in their character, for it was felt to be the function of the individual institution to provide the clinical instruction for its own residents. The course will start on July first of this year and will be open only to bona-fide residents of the various institutions participating. The generosity of the various staffs in giving so freely of their time and effort should insure the success of this undertaking.

Harry S. Gradle.

TONOMETRIC ANALYSIS

Lloyd's very painstaking and complete study of the history of tonometry and its apparatus (see the May and current issues of this Journal) emphasizes the infinity of labor which is often associated with the development of some new and apparently simple process. Probably no other one factor has contributed so greatly as tonometry to substantial advance in the diagnosis and treatment of glaucoma.

Today most ophthalmologists would no more think of dispensing with the tonometer for measuring ocular tension than the internist of omitting the clinical thermometer from his daily records of febrile disorders. Whereas records of intraocular tension are ordinarily taken at most once daily, if not at longer intervals, Birch-Hirschfeld (Zeitschrift für Augenheilkunde, volume 70, page 1) recently called attention to the value of the tonometric curve for the individual patient, based not only upon variations from day to day, but upon fluctuations at different times of the same day.

In tonometric study of more than one hundred patients, during a period of three years, Birch-Hirschfeld found the greatest rise of tension in so-called glaucoma simplex to be in the early morning hours. He is in favor of giv-

ing up the description "glaucoma simplex", or limiting it to cases in which both the evening and the early morning readings are within normal limits, although the field disturbances and the excavation of the optic disc confirm the diagnosis of glaucoma. Early but progressive primary glaucoma showed a characteristic tendency to important daily variations of tension which in some cases preceded the other symptoms of glaucoma by a considerable interval.

In primary glaucoma there is usually a close parallelism between the curves of the two eyes, whereas in secondary glaucoma the two curves are not parallel.

Concerning a number of patients Birch-Hirschfeld records an observation as to whose reliability most ophthalmologists will be disposed to reserve judgment. He found in these patients that when one eye had been almost lost from advanced glaucoma and was successfully operated upon by trephining or cyclodialysis, the permanent relief from hypertension in the worse eye was accompanied by a diminution in the tension of the second eye. He goes so far as to assume that there is a brain center for the regulation of the tension of both eyes, and that in the cases just mentioned the tension of the second eye was definitely influenced by reaction of this center to the reduced tension of the operated eye.

For systematic analysis of the individual glaucoma case, the tonometric curve may prove to be just as important as is the temperature chart in observation of a fever patient.

W. H. Crisp.

BOOK NOTICES

Kurzes Handbuch der Ophthalmologie

(Short handbook of ophthalmology), by forty-seven authors; edited by F. Schieck of Würzburg and A. Brückner of Basel. Fifth volume, "Uvea, lens, vitreous, retina, disc, and optic nerve," W. Gilbert, A. Jess, H. Rönne, and F. Schieck. Large octavo, 774 pages, 466 illustrations, mostly in colors. Berlin, Verlag von Julius Springer, 1930. Price of this volume, paper covers 134 marks, bound 138.60 marks.

The fifth volume of this new and very ambitious reference series on ophthalmology (see American Journal of Ophthalmology, 1930, May, p. 443) is the second volume to appear, having been issued almost simultaneously with volume one, and in advance of the intermediate volumes two, three, and four. The fifth volume fully maintains the standard of the first. Its four authors are all well known as writers and teachers. The excellence and profusion of the illustrations, especially those in colors, are striking; and the lavish expenditure on color reproductions is no doubt responsible in large part for the high cost of this reference work, amounting for each unbound volume to about $33.50, and for the whole series presumably to something like $235.00. It is an interesting fact that the European physician usually pays more for his literature and for his appliances than does the American.

Gilbert's work on the etiology of uveitis is well known, so that his authorship of the first section of this new volume is of special importance. Although perhaps more disposed than the average German writer to consider the significance of nontuberculous focal infections, he lays great stress on the tuberculous factor in obscure types of iridocyclitis. He comments as follows on the German and American points of view: "In the statistics of American authors of the last decade (Brown and Irons, Schweidnitz (!!!), Bulson) tuberculosis plays no part at all, or only a very insignificant part. It is completely replaced by 'focal infection, oral sepsis' and the like. The importance, justly emphasized by the Americans, of systematic investigation of the organs of the mouth and throat, as well as of the detection of other sources of suppuration, has already been mentioned elsewhere. For European conditions, however, I cannot support the view of

Kubik that tuberculosis is overestimated in our etiological considerations. It may be that favorable social conditions lessen the importance of tuberculosis in North America. But its complete disappearance from the latest statistics shows that over there it is inadequately considered. A recent tendency to substitute predisposing 'focal affection' for 'focal infection' suggests that even in America the overemphasis on 'focal infection' is beginning to be recognized".

The section by Jess on the lens and that by Schieck on the retina may, by the abundance of their illustrations of pathological conditions, well serve as atlases as well as authoritative monographs.

The section by Rönne on the disc and optic nerve as far back as the chiasm is characterized by the author's usual intricate attention to detail.

W. H. Crisp.

CORRESPONDENCE

Scientific miscellanea in Europe

To the editor:

My recent trip to Europe was rich in peeps at the activities of research and clinical workers in several countries. Some of these may interest readers of the American Journal of Ophthalmology.

In Copenhagen, beside Professor Lundsgaard, the venerable Professor Tscherning, whose name stands out in the story of physiological optics, is also found at the clinic, although retired, and has an office and three laboratory rooms in the basement. He was able to show me, contrary to my notions up to that time, that the sky is green; also that in very dim light one does not see things colorless, or in shades of gray, but in a violet color; and, further, that one sees them some hundredths of a second later than he does in bright light.

At Upsala, Professor Nordensen carries on the work of the eye clinic. He exhibited a stereoscopic model of his eye-ground camera at the International Congress, and he hopes before long to add color to the capabilities of this instrument, so that at the next International Congress, in 1933, he will be able to present a stereochromatic eye-ground camera as the final achievement. With the present equipment, a color film would require the prohibitively long exposure-time of ten seconds, as against one-tenth second with ordinary film.

One gains the impression that in Germany, at least, the ophthalmological world has gone a little bit mad over elaborate diagnostic and therapeutic equipment. In Krückmann's clinic in Berlin, in Clausen's at Halle, in Ergellet's at Jena, and in Hertel's in Leipzig especially, the amount was enormous. In the last place, there were seven Hertel visual-acuity drums (Sehprobentrommeln) with mirrors, and seven complete equipments of diagnostic instruments, in separate dark-rooms, including ophthalmometers and large table ophthalmoscopes of the Gullstrand pattern, or the equivalent, to say nothing of adjoining space with corneal microscopes, slit-lamps, red-free lights, and so on. All of this in order that the seven assistants shall not have to wait for each other. The chiefs sometimes said that not all of this equipment was useful, but that they must have it to avoid the inference that their clinics were incomplete. None of them has enough space. Professor Clausen explained to me that before the war, with six thousand new patients a year, there was room enough, while now, with all this bulky apparatus, they no longer have room for the six thousand.

The capstone of this movement seems to me to be Hertel's Kugeladaptometer, a metal sphere 80 cm. in diameter, lined with white, with elaborate devices for lighting the interior and projecting therein an annular image as a test object, with a battery of controls for the lights, and a photometer for appraising the intensity of the light. One hates to think of the cost of this instrument, and the rental of the space it occupies, over against its probable usefulness in

the clinic. Yet from the standpoint of design and construction it is a wonderful piece of work.

I have mentioned Professor Tscherning. His "photometric glasses" have found clinical application in the hands of Edmund. These are the equivalent of a set of smoked glasses, colorless, having definite and known factors of transmission. They have been found convenient in the clinical investigation of dark adaptation. Hemeralopia may be quantitatively estimated, and recovery from it may be followed during the use of vitamin A.

In Berlin, Professor Trendelenburg is interested in the various types of color blindness and color deficiency, with especial emphasis on the genetics of the question. Under his direction, the large Nagel color-mixer is being roused from its twenty-five-year sleep, and will be calibrated for use. Owing to the early breakage of a prism, and the subsequent death of its designer, this elaborate instrument has been laid away unused for that length of time.

In Hertel's clinic, at Leipzig, F. P. Fischer has been working on the chemistry of the aqueous. Among other things he showed me a series of corneal-reflex photographs, by which irregularities in the corneal surface, due to ulceration, or to its otherwise invisible after-effect, are plainly indicated. At the Physikalisch-chemisches Institut I saw Weigert, and heard something of his work on dyes and visual purple, which, when fully confirmed, will be an important landmark in our knowledge of the chemistry of vision.

The original color-mixer of Helmholtz I found at Tübingen in the possession of Kohlrausch. He is interested in the influence of the macular pigment upon color vision, and has modified the instrument for the purpose of making exact observations. The Helmholtz color-mixer employed by Kries is still at Freiburg, where Engelking, of Axenfeld's clinic, is preparing to make use of it.

In London, Duke-Elder is at work in the physiological laboratory at University College on the effect of histamin, adrenalin, and other agents upon intraocular pressure, using a method which excludes effects secondary to changes of general blood pressure. At University College, I also met Lythgoe. His work lay in the field in which I have been engaged for years—light sense and its modification by bright areas in the visual field. Lythgoe is trying to work out a quantitative method for estimating visual purple, with a view to investigating its dependence upon the nutritional condition of the organism.

At the National Physical Laboratory at Teddington, Stiles was working on light sense and its modifications, not only by bright areas, but also by "glare" —that is, by light-sources themselves —in the visual field.

Percy W. Cobb.

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ABSTRACT DEPARTMENT

Abstracts are classified under the divisions listed below, which broadly correspond to those formerly used in the Ophthalmic Year Book. It must be remembered that any given paper may belong to several divisions of ophthalmology, although here it is only mentioned in one. Not all of the headings will necessarily be found in any one issue of the Journal.

CLASSIFICATION

1. General methods of diagnosis
2. Therapeutics and operations
3. Physiologic optics, refraction, and color vision
4. Ocular movements
5. Conjunctiva
6. Cornea and sclera
7. Uveal tract, sympathetic disease, and aqueous humor
8. Glaucoma and ocular tension
9. Crystalline lens
10. Retina and vitreous
11. Optic nerve and toxic amblyopias
12. Visual tracts and centers
13. Eyeball and orbit
14. Eyelids and lacrimal apparatus
15. Tumors
16. Injuries
17. Systemic diseases and parasites
18. Hygiene, sociology, education and history

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9. CRYSTALLINE LENS

Friedenwald, J. S. **Permeability of the lens capsule, with special reference to the etiology of senile cataract.** Arch. of Ophth., 1930, v. 3, Feb., pp. 182-193.

The author found that no pores could be demonstrated in the lens capsule. The capsule was shown to carry a negative charge indicated by the flow of water from the positive to the negative side of the membrane. The permeability of the lens capsule was tested by four procedures. In the first instance, the substance to be tested was injected into the vitreous of the living eye, and later the lens was investigated for the presence of that substance. In another series, a similar procedure was carried out on eyes freshly enucleated. In a third series, the lenses were extracted from recently enucleated eyes and were immersed in the solution to be tested. In a fourth series, the capsules were removed and, after being very carefully washed free of cortex in sodium chloride solution, were tied on to the ends of glass tubes. Then the solution being studied was placed inside the tubes and the products of diffusion collected in a sodium chloride solution in which these tubes were immersed.

The permeability was found to be qualitatively the same in vivo as in vitro, and was present in varying degrees for all electrolytes and true solutes in water, and also for colloidal particles of all sizes. In all instances the capsule acted as an inert semipermeable membrane. Its permeability was decreased by calcium, cyanide and proteins. No significant difference was found in the permeability of the capsule of the different species of animal lenses examined, though individual variations were considerable. The permeability in young animals was much greater than that in mature animals. Cataract was produced in vivo by a slight decrease in permeability experimentally produced. Normal lenses in sterile salt solution at body temperature became cataractous if food stuffs were not supplied and waste products removed. The presence of cataractous lens cortex increased the permeability of the lens capsule, suggesting a possible explanation of the resorption of hypermature cataracts and the varying course of development of most senile cataracts.

M. H. Post.

Loddoni, G. **The zonule of Zinn.** Ann. di Ottal., 1929, v. 57, Oct.-Dec., p. 773.

The author has added to our knowledge of this delicate membrane by original work on the embryology in-

volved. In the past the studies have largely been made on eyes of fetuses at some special period. Those of from three to nine months have been taken and the attachments of the zonule carefully followed. The eyes of the adults and of the horse have also been investigated; the ball being divided so that the structures could be observed under the slit-lamp and their attachments noted. These studies have led the author to a restatement of the theories of accommodation; those of Helmholtz and Tscherning are carefully considered and neither is found to fit accurately into the anatomical findings. A third view in which the curvature of the central part is assumed to be produced by flattening of the periphery is that of Terrien. A fourth, the hydraulic, theory has received the support of several investigators. The muscles of Brücke and Müller cause the pressure of the aqueous humor in the posterior chamber against the vitreous. This latter is incompressible, but the forward motion causes an increase in the curvature of the lens. The greater curvature is in the pupillary area, the vitreous preventing a like curvature in the posterior part. The author feels that the Helmholtz theory will pass, as did Helmholtz's theory on the perception of sound, and will finally be discarded. *Park Lewis.*

Ovio, Giuseppe. **The ancient and modern conception of ophthalmia.** Ann. di Ottal., 1929, v. 57, Oct.-Dec., p. 755.

By the term ophthalmia the ancients understood any disease of the eyes. They distinquished the acute and chronic forms but made no differentiation of the structures involved. Diseases of the eyes were not considered as of local origin but were dependent upon some vitiated conditions of the blood. The author shows how in the course of centuries, with greater refinement of methods and increase in the use of modern appliances, we have come to a belief not widely different from that of the humoral pathologists. The ancients believed that there was some vitiating material in the blood that must be driven from the system. They attempted to accomplish this by abstraction of blood, by the use of derivatives, setons, vesicants, scarifications, atrocious cauterizations, and so on. While these barbarous methods have disappeared we still use the ice cap, warm fomentations over the stomach, baths, and so on, to accomplish a like result.

The teaching of modern medicine is that while inflammation attacks certain parts of the eyes, it is from conditions in the organism often remote that the disease originates. Simple conjunctivitis has a predilection for feeble children. It is an exaggeration to consider phlyctenules of the cornea as tuberculous foci. We have long sought the bacillus in the pustule but have not found it. We cannot exclude an allergic condition, and the cure is climatic, seashore bathing, and such measures as are employed for the cure of a dyscrasia. The same holds true of a trachoma. All agree on the contagious principle but consider a predisposition necessary for its general development. Senile cataract is regarded as a disease of old age, but it is found in those who are apparently in perfect health.

Alterations in the crystalline lens occur when it is put in a solution differing from the normal aqueous. Slight changes of a physical character may affect the capsular epithelium. These come from epithelial changes in the ciliary vessels from which the aqueous is secreted; these in turn from a condition of the blood and that from interference with renal function. One of the earliest evidences of old age is involution of the sex glands. This occurs earliest in women. There is decided evidence of cataract having a general origin. The ancients supposed that cataract was due to dropping of a secretion from the cerebrum. It is not impossible to suppose in the blood the presence or absence of some substance from the internal secreting glands that would make this speculation worthy of consideration. Similar conditions

obtain in glaucoma. That this is associated with arteriosclerosis is no longer a hypothesis. Endocrine and nervous influences are admitted, and it is not long since enucleation of the superior cervical gland was abandoned as a method of cure.

The ancients were familiar with sympathetic ophthalmia. Today we are taught that sympathetic ophthalmia is an organic specific form of infection in the narrow sense. We know that it develops after injury of the uveal membrane and that its elements, altered and disintegrated, or derivatives of these elements, are carried into the blood stream. There, according to one theory, they act as a foreign substance or toxic matter, and the blood forms antibodies prepared to combat the toxin. But the antibodies arriving in the uninjured eye produce destruction where there is nothing to oppose. This may occur spontaneously but probably far more after some slight injury has been inflicted. This may arise as an indirect irritation from lacrimation, photophobia, and palpebral spasm, which arise in the second eye as reflexes from the first affected. In keratitis diffusa, which is almost always binocular but in which the second eye is affected long after the first, an organ-specific affection is admitted. The cause may be either endogénous or exogenous. If pathogenic germs have entered the eye, producing antibodies, this develops in the other eye a state of hypersensibility. When in this condition the second eye may be attacked endogenously. In either case a slight injury of the unaffected eye may precipitate a keratitis. Many of the ancient opinions have been discarded. Others still remain, but most recent researches demonstrate that a study of the eye is useful and necessary for all physicians.

Park Lewis.

Weill, G. **The keratome in the operation for senile cataract.** Ann. d'Ocul., 1930, v. 167, Feb., pp. 81-104.

The author has previously described his special instrument and method but in this article he goes into great detail about the matter. He reviews first the history of the procedure, then discusses criticisms of it. Next he considers the necessary extent of the ideal cataract incision, shows that a properly constructed keratome can be used so as to make such an incision, and again describes his method of making the section. *Lawrence T. Post.*

10. RETINA AND VITREOUS

Amsler, Marc. **Markers for Gonin's thermopuncture.** Ann. d'Ocul., 1930, v. 167, Feb., pp. 115-117.

This is a description, with illustrations, of a series of calibrated instruments which are applied to the globe and permit of fairly accurate measurements from the limbus. At the point of the instrument is a stylet for marking with color. *Lawrence T. Post.*

Junius, Paul. **Manifestations and course of juvenile exudative macular retinitis.** Zeit. f. Augenh., 1930, v. 70, Jan., p. 129.

In 1866 Graefe described a case of central recurrent retinitis. In 1906 Hirschberg and Fuchs each published their findings on eyes similarly though not identically afflicted, and Fuchs postulated a disturbance of circulation in the capillaries about the macula as the basis of the disease. A relationship to syphilis has been suggested. Edema and exudative inflammation in the foveal region are the outstanding manifestations. To increase our knowledge in this field Junius reports twenty-one observations of his own. In each case juvenile exudative macular retinitis existed, but each, he thinks, represents a distinct type. Lues and tuberculosis were not clinically demonstrable. Three of these patients were followed for twenty-five years after the first observation.

In the first patient observed the onset was sudden. Vision was reduced to the ability to count fingers at two meters. There was a relative central scotoma, and retinal edema which was

gradually replaced by a circumscribed macular lesion. This reached its height in ten weeks and then receded. In six months restitution of structure and function was complete. The presence of hemorrhage suggests vascular disease. The cause was never found. Except for the benign course the findings were in many respects similar to two cases in Junius and Kuhnt's monograph on disciform macular degeneration.

The second case was a variant of the first and was characterized by more massive exudation in the macular region, more extensive hemorrhage, and more rapid healing. The entire process was limited to the retina. Disturbance of circulation, possibly embolism, in the circumfoveal capillary network seemed the probable pathogenesis, though the cause of this was never found.

The third case was characterized by the sudden appearance of a star in the macula and a pecular circumpapillary exudation in the deep layers of the retina behind the great vessels, in both eyes of a previously healthy girl of fourteen years. Vision was greatly reduced but no central scotoma was demonstrable. At the end of six months there was no change. After one year the star had disappeared from the macula, though pigment changes in this region remained. At the end of five years the circumpapillary change had nearly disappeared. The macula was normal except for pigment changes and the vision was 4/6. At the age of forty the patient died of aneurism of the aorta. This case is quite similar to one reported by Werner of Dublin.

In case four, central retinal detachment followed an attack of migraine and left a permanent defect of vision.

A few other related cases have been described in the literature but definitive judgment as to etiology is as yet impossible.

Little is known of permanent retinal changes in migraine. In 1922 Löhlein reported a case of central retinal edema and hemorrhage near the disc, which he ascribed to a vascular spasm in migraine. In 1927 Horniker published some very instructive observations on a form of central retinitis on a vasoneurotic basis, which he observed frequently in migraine sufferers. However, retinal detachment is not mentioned by him. *F. H. Haessler.*

Krückmann E. **Tuberculous lesions of the eye in the prepuberty period.** Russkii Opht. Jour., 1929, pp. 460-465.

Krückmann reports an unusual case of ocular tuberculosis in a nine-year-old girl. The following changes were observed: In the right eye, preretinal connective-tissue formation, a nodule in front of a retinal vein protruding into the vitreous, and atrophic areas in the choroid; in the left eye, first slight atrophy of the iris, opacities in the media, and a scar at the optic disc, later an anterior chronic uveitis with precipitates on the posterior surface of the cornea, and finally a hemorrhage into the vitreous.

Neither tuberculin therapy nor radiation was considered advisable, for fear of uveal complications. Climatic treatment (high altitude) resulted in a marked improvement of the ocular condition. The primary tuberculous lesion was probably located in the mesenteric lymph glands. It is of interest that a negative Pirquet was observed throughout the ocular condition.

M. Beigelman.

Löwenstein, A., and Reiser, Egon. **Roentgen treatment of thrombosis of the retinal veins.** Klin. M. f. Augenh., 1930, v. 84, Feb., pp. 230-240. (2 ill.)

Two cases are reported in which roentgen treatment perfectly restored the function of the retina. The authors ascribe this to a direct action on the vessels. The venous stasis which certainly is an essential, perhaps frequently the etiological, element is favorably influenced by active hyperemia. Roentgen rays can produce this local hyperemia. This is in accordance with the good results obtained by roentgen rays in parenchymatous keratitis, which is due

to a specific affection of the pericorneal vessels.

C. Zimmermann.

Møller, H. U. **Case of angiomatosis retinæ** (Hippel) with brain complications (Lindau's disease). Det Oftalmologiske Selskab i København's Forhandlinger, 1929, Feb., p. 34, and Mar., p. 69; in Hospitalstidende, 1929, Nov. 28 and Dec. 12.

The patient, a male forty-four years old, gave a history of gradually oncoming pain in the back of the head, in the neck, and behind the right ear. The headache was at times very severe and associated with vomiting. There was constant dizziness. The hearing of the right ear was much reduced. The vision of the left eye had gradually diminished during a period of eleven years and had entirely disappeared a year before. Examination of the eyes revealed the following: Right: vision 6/6; fundus, choked disc of three diopters elevation; small hemorrhages in the retina; field normal except for slight enlargement of the blind spot. Left: vision limited to recognition of light; fundus, extending from the region of the disc were seen two widely dilated vessels (three or four times the width of the normal); these passed forward and ended in a globeshaped, red formation with an elevation of about twelve diopters; the retina was grayish yellow and was pushed forward by large masses of exudate. This picture is typical of Hippel's disease, angiomatosis retinæ. The neurologic diagnosis was tumor of the brain with probable location in the cerebellum. The family history revealed that the father, two brothers, and two daughters of one brother had all died of some form of brain tumor.

The author believes that this case falls into the group described by Lindau in 1926. Lindau connected angiomatosis of the retina with a general disease characterized by angiomatosis of the brain and often with similar malformations in other organs (e.g. suprarenals, kidneys, epididymis). Lindau's disease is the only form of tumor of the brain in which there is a distinct hereditary tendency.

One brother had died in 1922 at an age of forty-five years and his hospital record was available. This revealed a history of gradual loss of vision; in the right eye from glaucoma resulting in final enucleation; in the left from a condition of the retina which corresponded with Hippel's description. The autopsy showed a yellowish and red tumor of the cerebellum and a tumor of one suprarenal, which had similar microscopic structures.

The author thinks it very likely that the other members of the family who died of brain disease were also affected by Lindau's disease.

(Continued report.) The patient appeared again on March 26, 1929, complaining of severe occipital headaches, dizziness, and frequent vomiting. He had a reeling gait of the cerebellar type. He had had an attack of unconsciousness the day before returning to the hospital. The right eye had not changed, the vision being normal but a choked disc of three diopters elevation being present. In the left eye the changes in the retina were more pronounced then before. There was complete deafness of the right ear, hyperesthesia of the extremities on the left side, and atrophy of the right half of the tongue. From these findings a diagnosis of capillary angioma with cyst formation of the right cerebellum was made. Operation on the right cerebellum was done under local anesthesia on April 27th (by Professor Schaldemose of the neurologic department). A cystic tumor about two centimeters in diameter was found at the usual site of acoustic tumors and was removed. On section the tumor proved to be a hyperplastic capillary hemangioma. The patient experienced prompt relief from his subjective symptoms and made an uneventful recovery, being discharged from the hosital after nineteen days.

This is the first reported case in which it has been possible to make a

diagnosis of Lindau's disease and then to remove the brain tumor in a living patient. *D. L. Tilderquist.*

Pletneva, N. A. **On the etiology of pigmentary retinitis.** Arch. Opht. (Russian), 1930, v. 6, pt. 4, pp. 471-483.

Prompted by several reports on the coincidence of pigmentary retinitis and endocrine disorders, the author has undertaken a roentgenologic study of the sella turcica in a series of sixty-five cases of pigmentary retinitis. Changes suggesting a hypofunction of the pituitary body were found in forty-three cases. Fifteen of these were given organotherapy, in the form of pituitrin injections. In seven cases, the visual acuity was increased, and in two an improvement in the visual fields was found. *M. Beigelman.*

Redslob, E. **Neuroepithelial hyperplasia in detachment of the retina.** Ann. d'Ocul., 1930, v. 167, Feb., pp. 104-115.

Soon after detachment, the external and internal granular layers become unrecognizable. The rods and cones entirely disappear. The ganglion cells survive these by a long time. The entire retina becomes thickened. This thickening may be apparent or real; the former where the retina is folded, the latter due to proliferation. The most striking modification is proliferation of the neuroglia.

The author continues with a detailed description of the various types of proliferation. Referring to glioma of the retina, he wonders if some irritative process may not be the basis, as in his previous discussion of proliferation he has felt that irritation and inflammation were important factors.

Lawrence T. Post.

Rieger, Herwigh. **A case of tapetoretinal degeneration with formation of a conoid mass in the macula.** Zeit. f. Augenh., 1929, v. 70, Dec., p. 22.

In one eye of a child a solid conical mass was visible. The author assumes that it resulted from glial proliferation in the particularly nonresistant foveal region of a retina which was undergoing atrophy. In the periphery changes characteristic of a finely granular tapetoretinal degeneration were visible. The literature is exhaustively discussed.

F. H. Haessler.

Scarlett, H. W. **Cyst floating in vitreous.** Ann. d'Ocul., 1930, v. 167, Jan., pp. 31-32.

The vitreous cyst was somewhat lobulated, the smaller lobe being above. The cyst was transparent, having a diameter of one and one-half disc diameters. It was located in the anterior inferior temporal quadrant of the vitreous. It was mobile but always returned to the same situation when the eye became quiet. The visual acuity was 6/6. Cysticercus was considered but was eliminated because of the absence of movement and because of certain pigment deposits which were present. A drawing accompanies the essay.

Lawrence T. Post.

Schiff-Wertheimer, S. and Tillé, M. H. **Bilateral progressive macular lesions in young people (Stargardt's disease).** Ann. d'Ocul., 1930, v. 167, Jan., pp. 1-14.

From study of the literature and of their own cases in particular the authors believe that this disease is of an inflammatory and probably infectious origin rather than degenerative. The question of whether the disease is a clinical entity is discussed. Two beautiful colored plates accompany the article.

Lawrence T. Post.

Vogt, A. **Further experiences with ignipuncture of the retinal tear in retinal detachment.** Klin. M. f. Augenh., 1930, v. 84, March, pp. 305-339. (34 col. ill. and 9 text ill.)

Vogt reports on the further course of eight cases which he published in the Klinische Monatsblätter für Augenheilkunde in May, 1929. To the fourteen already cured, another cured

case is added and a sixth is very much improved. Then follow the detailed clinical histories of seventeen new cases operated upon by ignipuncture of retinal tear. Out of the total of twenty-six, eleven cases were cured, five are still under treatment. Of the twenty-five spontaneous cases a tear of the retina could not be found in two. Children and very young persons were not affected, hence the spontaneous detachment was a senile or presenile degeneration which occurs relatively earlier in myopia. Myopia is not an essential condition, as three emmetropes and hypermetropes (aged fifty-three, fifty-seven, and sivty years) demonstrate.

The recent surprising results of ignipuncture suggest new conceptions on the genesis of detachment of the retina. According to Vogt the operation proves that the cause of spontaneous detachment is the rent in the retina, and from this result of the surgical experiment every theory of spontaneous detachment must start. The ophthalmoscopic observations and therapeutic effects described in the clinical histories display two phenomena: destruction of the vitreous body and degenerative changes in the retina in the equatorial zone, showing that the cystoid degeneration is a cause of spontaneous hole formation. As the detached margins of the hole are always everted on the vitreous side, there also seems to be a force from the agitated vitreous (in movements of the eye) which tears the retina open (not cicatricial retraction as formerly supposed). The strikingly rapid reattachment of the retina after operative closure of the hole seems to indicate that the pressure in the vitreous is higher than that in the subretinal space, but this can only serve its purpose as long as the continuity of the retina is preserved. The diagnosis of holes and rents and their localization, operative technique, and the course of healing are discussed in detail. Four plates of colored illustrations demonstrate the ophthalmoscopic conditions before and after ignipuncture.

C. Zimmermann

Wurz, Richard. **Juvenile hemorrhages into the vitreous.** Bratislavske Lekarske Listy, 1930, v. 10, Jan., p. 35.

The author gives a detailed report of six cases of the disease; the youngest patient was fourteen years of age and the oldest thirty-two. While under observation one case developed retinitis proliferans and another Coats's retinitis hemorrhagica externa. Focal reactions to tuberculin established the diagnosis in two cases; in four negative general examination, negative Wassermann test, positive Pirquet test, and recovery under tuberculin therapy justified the diagnosis of tuberculosis. From the course of these cases the author concludes that the best results are obtained from a combination of tuberculin therapy and nonspecific treatment such as autohemotherapy or milk injections.

Ray K. Daily.

Wurz, Richard. **Traumatic detachment of the retina.** Bratislavske Lekarske Listy, 1930, v. 10, Jan., p. 13.

The author reviews the literature on retinal detachment, relative to its etiology, and analyzes the cases observed at Brno since 1922. Of 112 cases of retinal detachment, twenty-three were attributed by the patients to trauma. In four of these the author eliminated the influence of traumatism, because the history was indefinite and the eyes were in a stage of advanced myopia and had degenerative intraocular changes. In eight cases with a definite history of traumatism he considered the injury a doubtful but possible etiological factor. In eleven cases the etiology was undoubtedly traumatic. Conservative treatment consisted of rest in bed, diaphoresis, milk injections, subconjunctival saline injections, and mercury inunctions. If no improvement was manifest in a few days they resorted to scleral puncture, or to Gonin's ignipuncture. Of eight cases considered nontraumatic, seven were treated conservatively and one was operated upon. In one case, treated conservatively, there was a partial reattachment with

improvement in vision to 6/50. Of eleven cases considered traumatic, one was blind and was not treated; while eight were treated conservatively and two were operated upon. In one the retina became reattached with normal central vision and fields; in another central vision improved to 6/12, and in a third central vision (fingers at three meters) was recovered and the fields were somewhat improved.

Ray K. Daily.

11. OPTIC NERVE AND TOXIC AMBLYOPIAS

Buchanan, Leslie. **Atypical coloboma and vascular anomaly.** Brit. Jour. Ophth., 1930, v. 14, Feb., p. 68.

Reminded by Mann's contribution in the December issue, the author presents his findings in a similar case. Corrected vision was 6/12. The appearance in the fundus was that of a large coloboma of the choroid, with a small band of normal appearance above it. Above the normal band was what appeared to be a small optic nerve entrance with a large ectasia upward. Blood vessels extended in two regular groups, one to the right, one to the left, each containing an artery and a vein. A small vessel extended up along the ectasia and branched.

About a disc's breadth above the upper extremity of the ectasia there was another optic nerve entrance of moderately normal appearance. The principal departure from the normal was the distribution of the blood vessels. The veins and the arteries at the lower part were small compared with those at the upper part. The vessels all seemed to come more from the nasal than from the central part of the nerve. (One illustration.)

D. F. Harbridge.

Calhoun, F. P. **Bilateral coloboma of the optic nerve.** Arch. of Ophth., 1930, v. 3, Jan., pp. 71-79.

True coloboma of the optic nerve is one of the rarest of congenital anomalies. The author therefore relates a case studied microscopically, with two color plates showing the two discs. That of the right eye shows a true hole in the lower portion of the disc. No vessels were seen on the floor of either disc. The right eye was much proptosed and was removed. At operation, a large, bluish-black mass containing fluid was found and removed with the eye. It measured 21 mm. horizontally, 20 mm. vertically, and 22 mm. anteroposteriorly. It was firmly attached to the globe. The cavity contained fragments of altered retinal tissue, and pigmentation suggestive of pigment epithelium, generally considered as being due to atypical development of the neural portion of the secondary optic vesicle, with alteration or differentiation of the layers within the globe. The vessels are regarded as retinociliary vessels. The vein appears normal. Differentiation between coloboma of the optic nerve head and of the choroid adjacent to the nerve head is difficult.

Coats has suggested two considerations: 1. The relation of the intervaginal space to the ectasia. 2. Whether or not the nerve contains the central vessels. Should the relationship be from the inner side, it must be a coloboma of the nerve and vice versa. In the case reported, such considerations lead to the diagnosis of coloboma of the optic nerve.

M. H. Post.

Dimissianos, Basile. **Experimental researches on the pathology of papillary stasis of orbital origin.** Ann. d'Ocul., 1930, v. 167, Jan., pp. 33-65.

Experimental injections of paraffin were made into the optic nerve sheaths in rabbits. This produced a papilledema. Sections were made and numerous photographs are included in the paper. These show the edema in the different parts of the nerve head and stem. The authors conclude that the edema is caused by interference with the venous return. There is a considerable discussion of the various hypotheses of the cause of papillary stasis.

Lawrence T. Post.

Graf. K., and Reis, W. **A contribution to the histopathology of intradural vascular tumors of the optic nerve.** Zeit. f. Augenh., 1930, v. 70, Jan., p. 613.

Only about two hundred and fifty tumors of the optic nerve have been described in the literature, and only seven of these were angiosarcomata. Of these seven only two belong to the group which the authors regard as angioma sarcomatosum. They describe in detail the histological findings in a case of angioma sarcomatosum, and discuss its nomenclature.

F. H. Haessler.

Hessberg, R. **Further results of malaria treatment of luetic, especially tabetic, affections of the optic nerve.** Klin. M. f. Augenh., 1930, v. 84, Feb., pp. 261-270.

Out of the first series of eight cases three retained useful vision for from three to five years. A new series of eight cases are arranged in tabular form. The time of observation is too brief for drawing conclusions, but the central visual results (fields of vision are not considered), seem to justify continuation of this method. The cases seem to indicate that treatment should be instituted after the first certain diagnosis of tabetic affection of the optic nerve, especially in incipient cases, without first trying other (usually ineffectual) procedures. For more advanced cases or because the general conditions seem to contraindicate such a severe treatment as the malaria cure, the author recently tried a milder fever treatment with pyrifer (bacterial albumin developed from a colon bacillus strain by H. Rosenberg, Freiburg-i-B.) on five cases. One was stationary, two hopeless, and two still under treatment.

C. Zimmermann.

Loeches and Dihigo. **Crouzon's disease. (Hereditary craniofacial diostosis.) Presentation of new case.** Rev. Cubana de Oft. y Oto-Rino-Laring., 1930, v. 11, Jan., p. 21.

A case of this rare but interesting abnormality is presented with discussion of its history, symptoms and anatomical findings, including its differential diagnosis. This clinical entity was first described by Crouzon in 1912, and is characterized by three groups of disorders, namely deformity of the cranium, malformations of the face, and lesions of the eyes.

The head deformity consists of an enlargement of the vault, mostly above the nose. The face presents marked prognathism of the lower jaw, with atrophy of the superior maxilla, and shortness of the upper lip. The lower lip is thickened and projects forward, with its tip curved outward and downward.

There is marked exophthalmos appearing shortly after birth, followed by extreme strabismus. Externally the eyes are not otherwise affected, their reactions to light and accommodation being preserved. There is a varying degree of optic atrophy, the remainder of the nervous system appearing normal. The mentality is not affected, and the abnormality is distinctly hereditary in its incidence.

The case described occurred in a six year old boy, who had seven normal brothers, and whose parents were well. He was born at term. Six days after birth marked exophthalmos developed, and at the age of four months a bony protuberance appeared at the level of the anterior fontanelle. Later another appeared at the posterior fontanelle, and they became united by a bony ridge. The other deformities of the face appeared within the first year. There was marked divergent strabismus. Blood Wassermann was negative, and the fundi showed no changes.

In comparison, oxycephaly shows no bregmatic tumor, but a deformity that arises so gradually that one cannot say where it really begins. Also the facies typical of Crouzon's disease does not exist, as the superior maxilla is overdeveloped. The exophthalmos of oxycephaly is only moderate, while in Crouzon's disease it may be extreme. Oxycephaly does not appear before the

third year, while Crouzon's disease is fully developed within the first few months of life. Other differences are outlined in this paper.

In Crouzon's disease heredity is the rule but it is quite the exception in oxycephaly. It is interesting to note that all cases thus far reported have been French. The maternal grandfather of this patient was also French and showed identically the same condition. A bibliography is appended, all from French or Spanish sources.

A. G. Wilde.

Møller, H. U. **Case of angiomatosis retinæ (Hippel) with brain complications (Lindau's disease).** Det Oftalmologiske Selskab i København's Forhandlinger, 1929, Feb., p. 34, and Mar., p. 69; in Hospitalstidende, 1929, Nov. 28 and Dec. 12. (See section 10, Retina and vitreous.)

Patry, André. **Recurring optic neuritis in the course of pregnancy.** Ann. d'Ocul., 1930, v. 167, Jan., pp. 14-29.

A woman had passed through three pregnancies uneventually but in the fourth and fifth noted ocular disturbances. The right eye developed complete blindness, and the acuity of the left was greatly diminished until pregnancy was artificially terminated. There was a considerable recovery of vision. The field lesions were of the nature of bitemporal hemianopsia. The author attributes the original defect to compression of the chiasm by the enlarged hypophysis.

Lawrence T. Post.

Pesme, Paul. **Concerning two cases of craniofacial dysostosis of Crouzon.** Arch. d'Opht., 1929, v. 46, Dec., p. 738.

A type of cranial malformation differing from tower skull was described by Crouzon in 1912 and has the following characteristics: There is a cranial deformity resembling oxycephaly, a facial malformation involving the nose and lower jaw, giving the appearance of prognathism, and a visual disturbance consisting of exophthalmos, divergent strabismus, and diminution of vision. To these characteristics Crouzon added the factors of heredity and familial occurrence of the malformation. Two cases thought to come under this classification are described in detail with photographs and x-ray studies. In neither case could the hereditary factor be demonstrated. Because of the ocular disturbances this syndrome should be recognized by ophthalmologists.

M. F. Weymann.

Stief, A. **Histopathology of the optic nerve in arteriosclerosis and in senile dementia.** Zeit. f. Augenh., 1929, v. 70, Dec., p. 41.

Pressure atrophy of the optic nerve caused by sclerosis of the carotid and ophthalmic arteries is well known. Disturbances of the function of this nerve, however, can also be produced by sclerosis of the small arterioles whose function it is to supply the nerve tissue with blood. It is assumed that these vessels have a short course and are end arteries, but their finer anatomy has not been thoroughly worked out. Sclerotic changes in them often produce localized areas of loss of function and may lead to total amaurosis. In two cases of senile dementia peripheral atrophy was demonstrable.

F. H. Haessler.

Swift, George. **The transverse sinus and its relation to choked disc.** Arch. of Ophth., 1930, v. 3, Jan., pp. 47-70.

This paper is an attempt to explain the absence of choked disc in certain cases of tumor of the brain, by demonstrating anomalies of the venous sinuses as the causative factor in such instances.

Two cases are cited with rudimentary transverse and sigmoid sinuses on the left side. In one the tumor lay on the left side and presented no eye symptoms, in the other it lay on the right side, compressing the functioning transverse sinus and causing bilateral choked disc. In a third case, that of a child who died on the morning of the third day in status epilepticus, tra-

beculæ were present in the transverse sinuses of both sides, and the jugular foramina were rudimentary and small in size. The venous sinuses were spread and the two layers of dura were widely separated. Large lakes of blood replaced the occipital sinuses, and two newly formed sinuses emptied into the jugular foramina. Hemorrhagic retinitis was present in both cases.

From the work of Streeter and others on the development of the dural sinuses, and on the peculiar anomalies found in the development of these sinuses, it is evident that the constant parts are the ophthalmic veins, cavernous sinuses, sigmoid sinuses, and jugular bulbs. Asymmetry of the superior longitudinal sinus and of the two transverse sinuses is frequent. Normally, general intracranial pressure results in congestion of the veins of the retina and disc, causing in turn edema, first of the disc, and later of the retina. Direct pressure against a sinus draining the right or left eye can only be located when in the region of the cavernous sinus or at the jugular bulb, as occurs in aneurisms of the cavernous sinus, lateral sinus thrombosis in mastoid disease, tumor or abscess of the temporosphenoidal lobe, and cerebellar tumors and cysts. The orbital circulation depends upon a free cavernous and petrosal circulation, and a normally developed venous sinus system allows for a free and easy circulation, capable of marked adaptability. Compression or occlusion, therefore, of the right or left sigmoid sinus does not cause any disturbance of the ocular circulation. The same would be true of the transverse sinuses, but unfortunately the left is usually somewhat undeveloped. Asymmetrical development results in breakdown of this flexibility and causes choked disc when the circulation of the functioning side is disturbed, as may occur from an angle tumor pressing on the functioning jugular bulb. If, on the other hand, such a tumor were situated in the region of the underdeveloped bulb, little or no reaction would take place until the tumor mass reached such a size as to cause cerebrospinal fluid pressure against the fourth ventricle and later hydrocephalus and choked disc. Tumors in the cerebral fossa do not result in occlusion of the transverse or sigmoid sinus, except by indirect pressure, when the cerebrospinal fluid cushion has been practically obliterated and tissue presses against the sinus walls, causing first a stasis and then a collapse. *M. H. Post.*

12. VISUAL TRACTS AND CENTERS

Bourguet, J. **The origin and situation of hypophyseal cysts.** Ann. d'Ocul., v. 166, 1929, Dec., pp. 971-976.

This is an abstract by the author of his paper read before the Society of Surgeons of Paris in May, 1929. The origin of these cysts is explicable only by an understanding of the embryology. In the human embryo the pouch of Rathke, a depression of the mucosa of the superior wall of the pharynx, becomes elongated into a hollow canal, the hypophyseal pedicle, which at its upper end surrounds in a crescent another hollow pedicle like itself, the tuber cinereum, extending from the third ventricle. This crescent is lined with epithelium which increases by budding and forms the hypophyseal gland. The pedicle, on the other hand, breaks up, and the fragments undergo involution and may disappear or may persist as vestigial remains and may constitute accessory hypophyses. These may be in a fibrous reduplication of the dura mater of the sella, in the osseous wall of the sphenoid, or in the mucosa of the pharynx. While the pharyngeal part undergoes such a considerable transformation in making all of the glandular part of the hypophysis, the nervous element, on the contrary, undergoes regression. It extends from below upward through the dura mater, above which membrane the hollow persists as the cavity of the infundibulum. It remains in communication with the third ventricle, lined with ependymal epithelium.

Between the glandular and nervous parts of the hypophysis one notes some vesicles resembling thyroid vesicles, en-

closing like them a colloid substance, and lined by a cuboidal epithelium. Some authors consider them vestiges of Rathke's pouch, others as remains of the notochord.

The various possible kinds of cyst are next considered as to their embryological modes of origin:

1. Degenerative type; this occurs in the adenomas and epitheliomas of the hypophysis. Adenomas are formed by a well circumscribed cellular hyperplasia. The epitheliomas, on the contrary, are badly delimited, with invasion of surrounding tissue. Histologically they resemble lymphosarcoma, and cystic changes take place. The origin of these is intrasellar.

2 and 3. Cysts of pharyngeal origin and intrasellar cysts of nerve origin. In the formation of the hypophysis, the terminal crescent of the hypophyseal pedicle, which is empty at the beginning, increases by budding. Often it happens that a certain number of cells take no part in the formation of the gland. They remain useless at the heart of the tissue which is growing. They stay thus, bordering a virtual cavity. At some period in their existence they may give rise to an abnormal substance which dilates the potential cavity, and a cyst of Rathke's pouch is formed. It increases in volume, compressing little by little the glandular elements which surround it.

The same process can occur in cysts of nervous origin. The tuber cinereum may not grow entirely from nerve tissue. It may present a slit lined by ependymal cells, which by their secretion give origin to a cyst.

There are thus two varieties of cyst of which the origin may be either intrasellar or suprasellar. Embryology and anatomy explain this, because in certain cases the entire glandular part of the hypophysis is not contained in the sellar space. A little tongue protrudes behind the chiasma. One can understand readily that in like manner a potential cavity may persist in this tongue, giving rise later to a suprasellar cyst of Rathke pouch origin.

Finally there exists a third variety of Rathkian cyst which is both intrasellar and suprasellar. In the case in which a tongue extends from the cavity of the sella, embryonal cells may exist above and below its roof. The cavity thus formed will be shaped like a sack tied in the middle. One part will grow below the chiasm, compressing the nervous part backward, and another above and in front of the tuber cinereum.

In those of nervous origin the process is similar. The lower part flattens the hypophyseal gland forward, and the upper part raises the base of the third ventricle.

4. Cysts of vesicular origin. Vesicles containing colloid, occurring in the growth of the hypophysis, may increase in size and give rise to colloid cysts which might be called hypophyseal goiters.

Lawrence T. Post.

Coppez, Henri. **The mechanism of lesions of the chiasm in fractures of the skull.** Arch. d'Opht., 1929, v. 46, Dec., p. 705.

Two cases of fracture in the frontosphenoidal area are reported with a resultant bitemporal hemianopsia. One case of anterolateral fracture of the orbit with avulsion of the globe and retraction of the temporal field on the opposite side is described. The writer does not believe that hemorrhages or fragments of bone are responsible for the chiasmal lesions in fractures of the frontosphenoidal region. By experiment upon the cadaver he finds that when the metopic suture is disjointed and spread a tear appears in the anterior portion of the commissure, when the separation reaches 24 mm. This is caused by the fact that the optic nerves are firmly adherent to their covering in the optic canal and cannot be pulled backward into the skull so easily as the commissure can be torn. Thus, in severe blows causing fracture of the skull, the sudden spreading and separation of the optic foramina is thought to cause tears in the chiasm, injuring the

crossed bundles. When a globe is forcibly torn out, as in the third case described, the nerve is torn loose at its most vulnerable point, which is the chiasm, and the crossed bundles of the opposite side are frequently injured. Illustrations of the experimental work accompany the article.

M. F. Weymann.

Igersheimer, Josef. **The pathology and therapy of tumors of the chiasmal region.** Klin. M. f. Augenh., 1930, v. 84, Feb., pp. 161-189. (8 ill.)

Igersheimer gives a synopsis of the pathological processes in the region of the chiasm with detailed clinical histories of seven cases. He emphasizes the fact that the pathology of the chiasmal region is much more extensive than is apparent from the ophthalmological literature. Discrimination between the different processes, especially tumors of the hypophysis, of the hypophyseal duct, and meningiomas, is very important on account of the entirely different therapy necessary. Not infrequently the ophthalmologist is the first to elucidate the localization of the whole disease. But a more exact diagnosis of the seat and kind of disease is generally only possible by cooperation between neurologists, ophthalmologists, roentgenologists, rhinologists and neurosurgeons. Roentgen therapy may only be successful in tumors of the hypophysis, and for them it is the method of choice. In meningiomas, gliomas, and aneurisms, only surgical treatment is to be considered. *C. Zimmermann*

Mylius, Karl. **On tumors of the region of the hypophysis.** Zeit. f. Augenh., 1929, v. 70, Dec., p. 9.

The clinical and anatomical findings of a tumor involving the floor of the third ventricle are reported in great detail because of the light this throws on the physiology of the water, fat, and salt metabolism. A cystic adamantinoma of the infundibulum caused a clinical picture of a year's duration characterized by severe visual disturbances, very severe polydypsia, polyuria, extreme progressive cachexia, hypersomnia, and prostration with many remissions. Exitus followed disturbances of heat regulation. The cyst occupied the region of the midbrain. It displaced the visual pathway and deformed the floor of the third ventricle and the brain stem ganglia. The stem of the hypophysis was grossly and histologically normal. The author refers the symptoms to injury to the midbrain. *F. H. Haessler.*

Seefelder, R. **Scotoma scintillans as the initial symptom of fatal brain lesions.** Arch. Opht. (Russian), 1930, v. 6, Nov.-Dec., pp. 489-506.

Scotoma scintillans is usually interpreted as a functional disturbance unrelated to organic brain lesions. The author observed this symptom in the early stage of a brain abscess localized in the cuneus, and also in encephalomalacia of the area supplied by the median cerebral artery. Both cases came to a fatal termination.

M. Beigelman.

Velhagen, K., Jr. **Ocular symptoms in encephalitis similar to those in Graves's disease.** Klin. M. f. Augenh., 1930, v. 84, Feb., pp. 189-206. (4 ill.)

Four cases of encephalitis are reported as presenting the following eye symptoms which are usually found in Graves's disease: visibility of the sclera above the cornea (Graefe's and Dalrymple's sign), infrequent winking (Stellwag's sign), and insufficiency of convergence (Möbius' sign). The possibility is discussed that the eye symptoms in Graves's disease are perhaps caused by toxic damage to the surroundings of the third ventricle and aqueduct of Sylvius or to the motor stem ganglia. This hypothesis is based on the frequent occurrence of the identical symptoms in epidemic encephalitis, which produces severe changes in these places, and the occasional coincidence of many other symptoms and anatomical alterations in both diseases.

C. Zimmermann.

13. EYEBALL AND ORBIT

Agnello, F. **Orbitocavernous thrombophlebitis.** Riv. Oto-Neuro-Oft., 1929, v. 6, Nov.-Dec., pp. 489-506.

The etiology and pathogenesis of orbitocavernous thrombophlebitis are connected with infectious processes of the tissues of the face, mouth, pharynx, ear, nose, and periorbital sinuses. The first case reported by the author is that of a boy of five years, who, beside severe general cerebral symptoms, showed bilateral edema of both eyelids and conjunctivas, straight exophthalmos more marked on the left side, and mydriasis and absence of the pupillary reactions. The media of both eyes were clear, and either fundus showed slight hyperemia of the retinal veins. At incision of the left orbit some fetid pus came out. The orbit communicated with the left ethmoid and antrum, whence the pus originated. The operation was followed by improvement of the general and local symptoms, and four months later the vision of both eyes was 8/10ths, while some degree of exophthalmos still persisted. The second case was that of a boy of two years whose orbital symptoms manifested themselves three days after the appearance of a furuncle on the left side of the upper lid. He showed bilateral edema of the lids and conjunctivas, bilateral exophthalmos, and immovable eyeballs. The pupils were of normal size and reacted to light. The patient died eight days after the appearance of the furuncle. All the symptoms of the first case, the author states, point to a diagnosis of thrombophlebitis rather than simple phlegmon of the orbit. The author cites from the literature those cases which show that a favorable course follows opening of the orbit, the sinuses, the mastoid, and drainage of the pus from these structures. Other cases in which such surgical procedures cannot be resorted to (for example, furuncle of the face) have a fatal outcome.

(Bibliography and 3 figures.)

Melchiore Lombardo.

Di Marzio, Q. **Orbital complications of polysinusitis.** Riv. Oto-Neuro-Oft., 1929, v. 6, Nov.-Dec., pp. 544-562.

The first case reported is that of an adult woman who showed symptoms of right orbital abscess, consisting in marked edema of the lids and conjunctiva, exophthalmos and temporal and downward displacement of the eyeball. Vision was 3/10, the pupil reacted, and ophthalmoscopy showed a slight blurring of the disc margins. The left eye was normal. Rhinoscopy, local transillumination, and radiography revealed that the patient was also affected by a right total polysinusitis. This had originated in the antrum from a decayed tooth. Following the proper treatment the vision returned rapidly to normal and other symptoms disappeared in due time. The second case is that of a man who showed symptoms of abscess of the left orbit. This was the result of an injury of the left frontal sinus. Beside a slight edema of the lids and conjunctiva, exophthalmos, and temporal displacement of the eyeball, he showed a dilated pupil which did not react to light, normal fundus, and vision light perception. The right eye was normal. The proper treatment was applied, and when last seen the vision had improved to 2/60 but the disc was found to be atrophic.

The absence of fundus lesions in both cases and the rapid improvement of vision in the first case after operation show that these conditions are due to compression of the optic nerve rather than to a true neuritis. The orbit and all affected sinuses must be operated on in order to obtain complete recovery. Atrophy of the optic nerve is avoided if operations are carried out at an early stage of the disease.

(Bibliography and 12 figures.)

Melchiore Lombardo.

Ehlers, Holger. **Case of double pulsating exophthalmos.** Det Oftalmolgiske Selskab i København's Forhandlinger, 1929, Feb., pp. 38-42; in Hospitalstidende, 1929, Nov. 28.

A woman of seventy-four years was

taken suddenly, in April, 1928, with a pain in both temples, a pounding sensation in the right ear, headache, and diplopia. A stethoscope, placed over either eye, on the forehead, or on either cheek, revealed a strong blowing sound synchronous with the pulse beat. There was moderate edema of the eyelids on both sides; the fundi showed pale arteries and congested veins. Vision: right 6/24, left 6/9. A partial paralysis of the left sixth nerve was found. Manual compression of the carotid arteries in the neck produced no change in subjective or objective symptoms. The general examination proved negative except for a blood pressure of 200/110. Later a marked pulsating exophthalmos developed with choked discs and further reduction of vision. After a month the eye symptoms began to abate, but the general condition became worse and the patient died three months after the onset of the initial

Autopsy revealed a large aneurism of the right internal carotid artery just inside the skull. The aneurism had compressed the hypophysis and forced it toward the left. The aneurism extended over to the left and had ruptured into the left cavernous sinus. Both cavernous sinuses were very much dilated. *D. L. Tilderquist.*

Hamilton, J. B. **Hemangioma of the orbit.** Brit. Jour. Opth., 1930, v. 14, Feb., p. 65.

A female aged forty years gave a history of misty vision five years before coming under observation. Vision was counting fingers at one meter. There was an extensive nevus of the left side of the face and considerable generalized dilatation of the scleral vessels near the temporal equator. The edges of the disc were blurred by edema, macular changes, and central retinal edema. X-ray showed slight density. The diagnosis was based on the presence of the above findings. *D. F. Harbridge.*

Loeches and Dihigo. **Crouzon's disease. (Hereditary craniofacial diostosis.) Presentation of new case.** Rev. Cubana de Oft. y Oto-Rino-Laring., 1930, v. 11, Jan., p. 21. (See Section 11, Optic nerve and toxic amblyopias.)

O'Connor, Roderic. **Exenteration of the ocular contents by a new technique.** Arch. of Ophth., 1930, v. 3, Feb., p. 151.

The conjunctiva is opened by the usual circular incision. Crucial incisions of the cornea and sclera are then made, extending well back toward the equator, bisecting the insertions of the recti. After removal of the ocular contents, the four points are well separated with hemostats and any remnants can be curetted or wiped out with gauze. The optic nerve even may be resected. Mattress sutures are then placed as shown in a diagram, so as to overlap the four corners, and finally the conjunctiva is brought together over the whole. The author claims absence of distortion of the globe, better motility of the artificial eye, free access to the inside of the globe, better retention of gold or glass ball, less sinking of the upper lid, and no alteration in the lines of action of the recti muscles.

M. H. Post.

Valière Vialeix, Beynes, and Thouvenet. **Enormous frontal suppurating mucocele with exophthalmos and neighborhood hyperostosis.** Ann. d'Ocul., 1930, v. 167, Feb., pp. 117-127.

In one case of this malady, the striking feature was the long history of twenty-eight years without sign of orbital compression, injury to the optic nerve, lesion of the muscles of the eyeball, or diplopia. At operation the pulley of the oblique was injured and diplopia resulted. The most interesting development was the bony hyperostosis in the vicinity. The lacrimal canals were not involved. Two photographs accompany the article.

Lawrence T. Post.

14. EYELIDS AND LACRIMAL APPARATUS

Filatow, W. P. **Keratitis meibomiana.** Klin. M. f. Augenh., 1930, v. 84, March, pp. 380-384. (See Section 6, Cornea and sclera.)

McKee, S. H. **Blastomycosis of the eye.** Arch. of Ophth., 1930, v. 3, March, pp. 301-305.

A number of fatal cases have occurred. About one-fourth of all cases involve the lids. The condition shows an early narrow red areola. In from two to six months it will have a diameter of from one to two inches. The surface becomes coarsely papillomatous or villiferous; the deep, irregular clefts are filled with pus. The areola arises to meet the base of the ulcer and is studded with subepithelial or intraepithelial abscesses, which appear as minute yellowish points. If pricked, these yield a small quantity of sticky pus, in which the organisms can be easily demonstrated.

The diagnosis depends upon demonstrating the organisms. The double contour of the yeast bodies can easily be seen after treating a few drops of pus with sodium hydroxide. Fixed sections imbedded in paraffin are best studied with Mallory's connective tissue stain.

The treatment consists in the administration of potassium iodide from two to four hundred grains a day, especially combined with roentgen ray therapy. Abscesses are treated by ordinary surgical means. *M. H. Post.*

15. TUMORS

Corrado, A. **A case of choroidal and epibulbar metastatic carcinoma.** Arch. di Ottal., 1929, v. 36, Sept.-Oct., p. 337.

This case, although presenting extrabulbar involvement in addition to the choroidal carcinoma, showed no exophthalmos and no limitation of motion. For this reason the diagnosis was made only at autopsy. The report is accompanied by a voluminous bibliography. *David Alperin.*

Panico, E. **Encapsulated retrobulbar angiofibroma.** (With plates.) Ann. di Ottal., 1929, v. 57, Oct.-Dec., p. 858.

The author's observations are based on this rare form of orbital tumor which occurred in a boy of sixteen years. The left eyelids were edematous, and there was slight proptosis of the ball, with loss of sight in the affected eye and entire absence of pain; the papilla was swollen, with indistinct margins. The veins were turgid and tortuous, the arteries narrow. The tumor, the size of a pigeon's egg, was removed by the Krönlein technique without injury to the ball. Part of the neoplasm had the characteristics of a fibroma; in another portion the connective tissue surrounded new-formed vessels, giving the tumor an angiomatous character. Several zones of hyaline degeneration were encountered. While such tumors are not malignant they are always serious, and by compression of the nerve may result in optic atrophy as happened in this case. *Park Lewis.*

16. INJURIES

Goldstein, I., and Wexler, D. **Uveal and iridic melanoma in neurofibromatosis (Recklinghausen). Arch. of Ophth.,** 1930, v. 3, March, pp. 288-296.

The orbit and its appendages, to a considerable extent, show the characteristic disturbances of neurofibromatosis, such as elephantiasis, pigmented plaques, and small tumors with other characteristic lesions. Neurofibroma is frequent in the orbit. Pigmented nevi of the lids, conjunctiva, and sclera are seen, as is hydropthalmos, associated with buphthalmos and elephantiasis of the lids. The iris may exhibit melanotic tumors of various sizes. A case is described and numerous such melanotic lesions of the iris are shown. The origin of melanoma in the iris is considered, with references to the literature. *M. H. Post.*

Lear, E. G. **Pathologic effects of ultraviolet rays on the eye, and treatment.** New York State Jour. Med., 1929, v. 29, Oct. 15, pp. 1270-73.

Lear reports three cases of ophthalmia due to exposure to ultraviolet rays. He finds a definite period of latency (within twenty-four hours), between the time of exposure and the onset of symptoms of itching, pain, and photophobia. The retina did not appear to

be affected in his cases. In the treatment the use of silver nitrate and zinc sulphate aggravates the condition; the most gratifying effects are obtained from immediate instillation of a suitable cycloplegic, preferably homatropin, with cold applications, and the wearing of smoked glasses against strong rays of light.

George H. Stine.

Mazel, Vladimir. **Nonperforating ocular injuries.** Bratislavske Lekarske Listy, 1929, v. 9, Oct., p. 1135.

Not including retinal detachment, there were treated at the Brno Clinic 113 cases of nonperforating ocular injuries during the period 1921 to 1928. The corneal lesions were 12 erosions, 2 infiltrations, and 12 transitory opacities of the middle and deep layers. Hyphemia was seen in 59 cases, in 35 of which it was the most prominent symptom. Thirteen cases had ruptures of the iris, 7 iridodialysis, and 35 other cases had iridoplegia. Vossius' opacity of the lens was observed twice in children, after blows on the eyeball with a whip and a ball respectively. There were 25 severe injuries of the lens, of which five were complicated with secondary glaucoma. This occurred in two eyes with traumatic cataract, one eye with a subluxation of the opaque lens, one clear lens dislocated into the vitreous, and one lens impacted in the pupil. There were 20 vitreous hemorrhages, 3 ruptures of the choroid, 6 retinal hemorrhages, and 3 cases of central retinitis with loss of foveal reflex and Berlin's opacity. The visual results were in 64 patients 6/6 to 6/30; in 9 patients 6/30 to 6/60; in 38 patients less then 6/60. Two eyes were enucleated.

Ray K. Daily.

Patton, J. M. **The protective value of certain special types of spectacle glass.** Jour. Amer. Med. Assoc., 1929, v. 93, Oct. 19, p. 1190.

Patton advises the constant wearing of spectacles for protection by persons with only one eye no matter what their age or occupation. As shown by numerous experiments which are described and illustrated, a laminated glass affords the maximum of ocular protection. This type of glass is not entirely free from slight imperfections, especially a tendency toward slight discoloration, but its quality is being improved. It is also recommended for children, when glasses are needed, and for all persons with two good eyes in occupations hazardous to the eye. (Discussion.)

George H. Stine.

Sabata, J. **Experimental cauterization of the eye with lime.** Bratislavske Lekarske Listy, 1930, v. 10, Jan., p. 31.

The article is a report of experiments on the eyes of rabbits. The author found that the corneal epithelium had a marked resistance to lime. A lime water bath lasting not more than five minutes produced a temporary and rapidly clearing opacity of the cornea. Prolonged exposure tended to produce epithelial erosions and more extensive corneal damage. A lime suspension added the mechanical irritation of lime particles to the chemical action of the lime. Addition of sand increased the tendency to the production of corneal and conjunctival necrosis and healing with the formation of synechiæ.

Ray K. Daily.

Sawhney, M. R. **Report on a case of a thorn under the upper lid.** Brit. Jour. Ophth., 1930, v. 14, March, p. 115.

This report well illustrates the natural resistance of a child's tissues. A boy aged five years had received an injury by a thorn five months previous to observation. The eye had been red and inflamed, and during the past three weeks there had been a purulent discharge. There was no history of pain. Just below and external to the caruncle was a mass of granular tissue. The cornea was not damaged. Under a general anesthetic the lid was everted, and a long greyish object was found presenting from the granular tissue. With a pair of forceps the macerated remains of a thorn one inch long was removed.

D. F. Harbridge.

Slavik B. **Perforating ocular injuries.** Bratislavske Lekarske Listy, 1929, v. 9, Oct., p. 1133.

The author gives a detailed report of the visual results of 542 perforating ocular injuries, of which 430 were occupational. Briefly, the resulting vision was 6/6 to 6/12 in 10.7 percent of the cases; 6/15 to counting fingers at 3 meters in 14.3 percent; below that to complete blindness in 71.7 percent; while 35.5 percent of the eyeballs were enucleated. Five cases of sympathetic ophthalmia developed in this group. In one case the exciting eye developed sympathetic papilloretinitis six weeks after magnet extraction of a foreign body. The eye was enucleated; within 2 years the sympathizing eye was blind from secondary glaucoma. In another case the exciting eye, with iridocyclitis and retinal detachment, was enucleated two months after a perforating injury; the lens of the sympathizing eye became opaque and was extracted after two years with a visual result of 6/60. In the third case the exciting eye, with a plastic iridocyclitis, was enucleated, and the visual result in the sympathizing eye was counting of fingers at four meters. In two cases the exciting eyes, with iridocyclitis, were not enucleated; the resulting vision was counting fingers at 1.25 and 1.5 meters; the sympathizing eyes had vision of 6/12 and 6/20. A total of 148 enucleated eyes were studied microscopically. The three eyes enucleated with the diagnosis of sympathetic ophthalmia presented the microscopic picture typical of the disease. Three other eyes were microscopically suggestive of sympathetic ophthalmia.

Ray K. Daily.

Vejdovsky. **Some rare ocular injuries.** Bratislavske Lekarske Listy, 1930, v. 10, Jan., p. 29.

The author reports three rare cases (the introduction of a piece of aniline pencil into the upper conjunctival fold, two particles of glass imbedded in the iris, and a corneoscleral wound inflicted by the beak of an owl), and reviews the literature bearing on the first two cases. Although the indelible pencil remained in the conjunctival sac only one-half hour, it produced a severe iritis and keratitis with epithelial defects. Recovery ensued in thirty days. Although it is generally stated in the literature that glass particles in the iris are not irritating and may be left alone, they had to be removed in this case because they caused recurrent inflammatory attacks. The eye injured by an owl was lost through suppurative inflammation.

Ray K. Daily.

Zahor, Alexsei. **Traumatic detachment of the retina under the Workmen's Accident Insurance Association (Czechoslovakia).** Bratislavske Lekarske Listy, 1929, v. 9, Oct., p. 1133.

Among 6,476 ocular injuries examined for the insurance association there were 69 cases of retinal detachment. After disputing liability in some cases, the association finally accepted it in 50 cases and was exempt in 19. Eleven cases were associated with perforating injuries, and in these, of course, the relation of the detachment to the injury was obvious. Of the other 58 cases, 38 were attributed by the patients to ocular contusions. In determining the influence of the injury on the disease, it is necessary to elicit a very careful history and to make every effort to obtain reliable information relative to the condition of the eye previous to the injury. Patients have a tendency to attribute retinal detachment to an injury, even when it is a result of ocular disease, such as myopia or intraocular inflammation. With a history of an ocular contusion, a retinal detachment in previously normal eyes was in every case considered a result of the injury. In eyes predisposed to detachment, the disease was attributed to the injury in forty-eight percent of the cases. Among detachments attributed to injuries other than ocular contusions, only forty-five percent were really due to traumatism.

Ray K. Daily.

Zahor, A. **The disappearance of chalcosis signs in the eye.** Zeit. f. Augenh., 1930, v. 70, Jan., p. 171.

The author adds two observations to those recently reported by Jess. In the first instance the changes were noted two years after injury, reached their height in four years, and had disappeared entirely in ten years. The foreign body, however, was still demonstrable, possibly so thoroughly encapsulated that no more copper could diffuse through. In the second case chalcosis was noted one year after injury, reached its height four years later, and had disappeared seven years after the injury. *F. H. Haessler.*

17. SYSTEMIC DISEASES AND PARASITES

Bistis, J. **Contribution to the ocular complications in intermittent fever.** Ann. d'Ocul., 1930, v. 167, Feb., pp. 127-133.

The author reviews all known complications, then describes his case, which was featured by an opacity in the lower part of the cornea. The slit-lamp showed this to be made up of many fine particles on the endothelium. On the anterior surface of the lens one noted a brownish ring corresponding to the edge of the iris before dilatation. The lens presented a gray opacity in its central part, leaving the periphery transparent. This was therefore a case of intermittent fever complicated by cataract and iridocyclitis.

Lawrence T. Post.

Galavielle and Dejean. **Ophthalmomyiasis due to œstrus ovis.** Arch. d'Opht., 1930, v. 47, Jan., p. 32.

A boy of six years developed a unilateral acute conjunctivitis after being struck in the eye by an unknown object. Two days after the beginning of the inflammation, examination with a loupe showed small white active larvæ in the lower conjunctival fold. Six of them were removed, after which the inflammation was cured. The larvæ were found to be those of œstrus ovis, which usually deposits its eggs in the sheep. In this case the blow felt was very likely the fly's contact with the eye as it deposited its eggs in the conjunctival sac. *M. F. Weymann.*

Gay, L. N. **The treatment of ocular tuberculosis with tuberculin.** Arch. of Ophth., 1930, v. 3, March, 1930, pp. 259-287.

The author has had very gratifying results from the use of tuberculin in the treatment of a selected group of cases in the Wilmer Institute during the last few years. Thirty cases are presented, of whom fifteen had choroiditis, chorioretinitis and uveitis; eight keratitis; one a tuberculous nodular scleritis; one iritis, and five recurrent intraocular hemorrhages. To avoid the influence of general hygiene, care was taken not to disturb the way of living of any of these cases; some lived well, others poorly. Diagnosis was made by the intradermal injection of old tuberculin. First 0.001 mg. was used, followed by 0.01 mg. if no reaction followed in forty-eight hours, and this in turn by 0.1 mg. Positive reactions to the two former were considered definite, but if only to the latter, somewhat uncertain.

In order to avoid the suspicion of a nonspecific reaction and to prevent harmful local reactions, treatment was confined at the start to doses of extremely small concentration. The initial dose was, as a rule, 0.000001 mg., gradually increasing up to 100 mg. as a maximum, where it was held for about three months before stopping. The doses were given at first twice a week, later once a week. Local reactions were indications for reducing the dosage. The ideal result is healing without any evidence of a flare-up.

No patient among the thirty was made worse. Many have improved or have had an arrest of the condition present. Skin sensitization was reduced in only nine, never abolished, a result in keeping with most allergic phenomena. The Denys tuberculin was used. Diagnosis was made intrader-

mally and treatment was given subcutaneously. Bouillon filtrate was preferred as being more uniform in strength than bacillary emulsion. The use of tuberculin should not be considered unless all other foci of infection have been removed and the eye has failed to improve after three to six months from the time of such removal.

M. H. Post.

Koldovsky, K. **Unilateral conjunctivitis granulosa caused by the encapsulation of a meal-worm.** Bratislavske Lekarske Listy, 1930, v. 10, Jan., p. 44.

The author warns against the diagnosis of trachoma in a unilateral conjunctivitis of some duration, if the other eye shows no trace of old or recent involvement. He reports an inflammatory process of the upper lid with hypertrophy, granules, and scar formation, which was diagnosed as trachoma and unsuccessfully treated for four months. The process was caused by encapsulation of a meal-worm (tenebrio molitor) in the tarsal conjunctiva, and cleared up promptly after removal of the foreign body. *Ray K. Daily.*

Rodin, F. H., and Carson, J. G. **Eye lesions in patients with positive Wassermann reactions.** Jour. Amer. Med. Assoc., 1929, v. 93, Aug. 3, p. 360.

This study was undertaken to find the types of eye disease and the frequency with which they occur in a consecutive series of patients with positive Wassermann reactions. Of the 1,000 consecutive case histories examined, 286 of which were seen in the eye clinic, one hundred patients, seventy-six male and twenty-four female, had demonstrable eye lesions. The greatest age incidence occurred between forty and fifty years.

Practically every pathologic eye condition was present. The lesions most frequently found were optic atrophy, Argyll Robertson pupils, interstitial keratitis, iridocyclitis, and ophthalmoplegia interna. In the series of patients with positive cerebrospinal-fluid Wassermann reactions there was a predominance of degenerative lesions such as optic atrophy, Argyll Robertson pupils, ophthalmoplegia interna, and ocular palsies.

It is concluded that a routine eye examination is advisable in all patients with a positive blood Wassermann. A Wassermann reaction is indicated whenever the etiology of an eye condition is unknown or doubtful. For the full detailed statistical analysis the original article should be consulted.

George H. Stine.

Rutherford, C. W. **Membranous conjunctivitis with loss of eyeballs.** Jour. Amer. Med. Assoc., 1929, v. 93, Dec. 7, p. 1779. (See Section 5, Conjunctiva.)

Salvati S. **The use of tracolysin in the treatment of ocular leprosy.** Arch. di Ottal., 1929, v. 36, Sept.-Oct., p. 389.

In the absence of a specific for the cure of leprosy, the author reports a case in which tracolysin caused absorption of the leprosy nodules in the only eye of the patient; the other eye having been lost from the same disease, after treatment with chaulmoogra oil and intravenous injection of neosalvarsan. *David Alperin.*

18. HYGIENE, SOCIOLOGY, EDUCATION AND HISTORY

Canis. **Geographic division and communicability of trachoma.** Rev. Internat. du Trachôme, 1929, v. 6, July, pp. 106-120.

In a trachoma survey of Algeria, Canis found the incidence to be much greater along the main routes of commerce and travel, and he has interpreted this finding as an argument in favor of the communicability of the disease. He presents evidence, however, to show that contagion occurs most frequently at a very early age, less so during adolescence, and rarely if at all during adult life. He believes that the contact which occurs during the period of military training does not tend to disseminate the disease, and he calls attention to the fact that trachoma was no more prevalent after than before the Great War, even though large numbers of tracho-

matous African troops were in contact with the Europeans during this time.

Phillips Thygeson.

Di Giunta, Russo. **Trachoma in Cyrenaica during recent years.** Ann. di Ottal., 1929, v. 57, Oct.-Dec., p. 874.

Since this area came under Italian control no subject has been of greater importance than that of trachoma. For the past four years a most intense and accurately recorded movement has been under way for its control. Intensive measures, not only curative but educational and prophylactic, have been put into effect. Among the native population, which is so largely afflicted, there has been a gradually increasing appreciation of the benefits that are being provided and a growing faithfulness in observing sanitary regulations. It is now no longer a common spectacle, as it was formerly, to see natives led around with running eyes covered with flies and unprotected by tinted glasses from the scorching rays of the sun. While a pathetically large number of blind people are still in evidence, these are the product of the maladministrations of a numerous group of native operators whose guild reaches the dignity of a profession in which secret methods and instruments (verily of torture) are passed from father to son, and attain the importance almost of a religious rite. Among the eye diseases treated during the past four years an average percentage of 58.81 was classified as trachoma. Of the entire population, 27.7 in each thousand are afflicted with the disease. Many of the children show healed cicatrices, indicating that they must have been infected at a very early age. Trachoma was found more prevalent in the villages and among the nomadic tribes. In the latter, however, it assumed a milder form.

Among the prophylactic measures which are rigorously carried out are examination of the eyes of all pupils at the beginning of the school year, classification of the well and infected, obligatory treatment where needed, hygienic instruction to those capable of receiving it. Extensive statistics are embodied in this report. *Park Lewis.*

Fuchs, Ernst. **Development of ophthalmology in Europe.** Arch. of Ophth., 1930, v. 3, Feb., pp. 133-147.

This delightful address was delivered at the dedication of the Wilmer Ophthalmological Institute. The great institutions are enumerated in the order of their foundation, beginning with the Royal Ophthalmic Hospital of London.

The infant specialty was referred to in the Ebers papyrus about 1500 B.C. The stories of couching of cataract, later its extraction, and iridectomy for glaucoma, are related briefly. The great names of Bowman, Luellen, Barth, and Beer, and their ignorant but skillful instructor, Wenzel, who practiced couching with considerable success, are reviewed. Beer held the first independent chair with the rank of full professor in Vienna. Even the famous Graefe only obtained his chair four years before his death in 1866. Panas was appointed at the University of Paris in 1879. The author was the first incumbent at the University of Liége, in 1881. The Williams brothers were the first in America; the elder at Harvard in 1871; the younger in Cincinnati in 1860. Through the latter the ophthalmoscope was first brought to America. Mackenzie, the Scotch surgeon, first used focal illumination. The contributions of Donders and Snellen are not forgotten, nor those of many other Titans of ophthalmology. The published paper is accompanied by excellent photographs of many of the masters. *M. H. Post.*

Kadlicky, R. **Seasonal variations in the frequency of ocular lesions.** Bratislavske Lekarske Listy, 1929, v. 9, Sept., p. 770.

These variations are demonstrated graphically, based on 36,075 patients observed during nine years (1920-1928). Of this number 18.42 percent had anomalies of refraction; 25.95 percent dis-

eases of the adnexa (orbit, lids, lacrimal sac, and conjunctiva, exclusive of trachoma and blennorrhea); 17.52 percent diseases of the cornea, exclusive of serpiginous ulcer; 11.9 percent infections (trachoma and blennorrhea); 9.03 percent injuries, including serpiginous ulcer; 7.2 percent cataracts; 5 percent diseases of the uvea and retina; 3.65 percent nerve lesions (diseases of the optic nerve and disturbances in the innervation of the ocular muscles); and 1.2 percent primary glaucoma. The chart of the entire number shows the lowest number of patients in December, a steep rise in January, and a descent in February. The curve then rises gradually, reaching the summit in November. The downward curve, until the end of the year, is interrupted by small rises in August and November. The curves of the various subdivisions, as grouped above, are similar to the curve of the entire group, with the exception of the curves for refractions and injuries. The largest number of anomalies of refraction is seen during August and October, when people take their vacations. The chart for ocular injuries shows a continuous rise, reaching the summit in August. The decline is interrupted by a rise in November. The injuries are incident to work in the fields and the cutting of lumber; the latter explains the November rise. The author attributes the greater frequency of ocular lesions in the first part of the year to an increased activity of microorganisms with the warmth of the spring, and to a lowering of the resisting power of the body during the winter; the latter being caused by lack of vitamin in the winter diet and lack of sunshine (ultraviolet radiation), due to prolonged living indoors.

Ray K. Daily.

Lewis, F. Park. **The five-minute angle as a general formula for recording visual acuity.** Jour. Amer. Med. Assoc., 1929, v. 93, Sept. 28, p. 972.

The author proposes substituting as a record of visual acuity a five-minute-angle scale in place of the fractional system of Snellen which is now used. The letters of the new chart would be of different sizes and scaled at different distances from twenty to two hundred feet at intervals of five minutes. Visual losses are calculated for from no loss to 100 percent loss (5 to 55 minutes). Thus 20/20 equals no loss, 20/38 equals vision of ten minutes or ten percent loss, 20/110 equals vision of thirty minutes or fifty percent loss, and so on. The idea is to standardize visual acuity in such a way as to show at once the percentage of visual loss in a more regular way. Interesting charts and equations are given. *George H. Stine.*

Maggiore, L. **Trachoma in Italy: distribution of the disease and prophylactic and social measures employed.** Ann. di Ottal., 1929, v. 57, Oct.-Dec., p. 763.

This is an abbreviation of the author's more complete paper which was read at the recent International Congress in Amsterdam. A defect in existing statistics lies in the fact that similar methods are not everywhere employed. Certain figures include only those of the afflicted in process of cure or newly attacked; in others the figures are from the schools; others give military statistics. Hence with the best efforts exact reports cannot always be obtained. Among the most valuable are those of the schools, because they include both sexes and groups of individuals perfectly controlled; they cover definite ages and are of great importance to the country's welfare. The author's observations include military encampments, schools, public hospitals and dispensaries.

The subject is considered first geographically and second as to the measures employed for control of the disease during the last twenty years, both medical and prophylactic. In 1926 the proportion varied greatly, from 66 percent in Sardinia where it is most prevalent to 0.09 percent in Venezia Tridentina where it is almost absent. The prophylactic measures cover compulsory reporting, the treatment and pro-

phylactic care of school children, segregation of those actively infected, educational measures, care of the children of the preschool age, free public treatment stations, free surgical and hospital clinics where required, help in the homes, and general educational propaganda. The author believes that the efforts that have been employed have already lessened the amount of trachoma in Italy. He makes the important statement that the first necessity is the construction for the people of sanitary homes under hygienic conditions, to take the place of the miserable habitations of the poor. The disease can only be wiped out by the adoption of such general sanitary measures. The struggle will take a long time and require much patience and money, but he believes that under the measures now being carried out it will ultimately be controlled.

Park Lewis.

Mills, Lloyd. **The function of the eyes in the acquisition of an education.** Jour. Amer. Med. Assoc., 1929, v. 93, Sept. 14, p. 841.

Mills decries the present high-speed methods in education; not only do they entail the sacrifice of accuracy, but their effects on the structure and functions of the eyes, nervous system, and body as a whole are most harmful. Thus the subject of elementary education is too important to be left to the jurisdiction of educational experts alone. A tentative plan of fundamental education based largely on the known facts of the visual function is offered. The peripheral vision and its connections with voluntary movements should be emphasized in young children; the education of foveal vision should come later. (Discussion.)

George H. Stine.

Puscariu, Elena. **Statistical considerations on the phases of trachoma during the school age (7 to 20 years) in students and nonstudents.** Rev. Internat. du Trachôme, 1929, v. 6, July, pp. 121-124.

291 trachomatous students were grouped according to the phase of the disease. 258 were found to be in phase 1 and 2, 21 in phase 3 and relapses, 12 in phase 3 with pannus. Of the 100 nonstudents in the same age group, 37 were in phase 2, 5 in phase 3 without pannus, and 46 in phase 3 with pannus, 9 of these having entropion. Pannus would seem to be much less frequent in the school children, which can only be explained by the fact that the students contract the disease later, while in the secondary and boarding schools, and come to treatment earlier. In the nonstudents the disease is contracted early in life in the family, and consequently has time to evolve to pannus, which has usually a relatively late onset. Statistics would seem to show that the frequency of trachoma is three times greater in those who go to school than in those who do not, but in the latter the disease is usually not discovered in phase 1, which has either mild or no symptoms.

Phillips Thygeson.

Schweinitz, G. E. de. **Some of the phases and contributions of American ophthalmology.** Arch. of Ophth., 1930, v. 3, Jan., pp. 1-30.

In an address delivered at the dedication of the Wilmer Institute of Ophthalmology, the author has given an amazingly interesting review of American ophthalmology, which fails only in omitting mention of his own many and noteworthy contributions.

The author considers his subject under various subtitles; anomalies of refraction; anomalies of muscle balance; the toxic amblyopias; sympathetic ophthalmia, uveal tract disorders and focal infections; medical ophthalmology; ophthalmic surgery; research work, bacteriologic, pathologic and biochemical; neurologic perimetry; therapeutic, diagnostic, and other contributions; public eye services, ophthalmic teaching, and ophthalmic literature.

The paper is indicative of the author's wide grasp of the subject and should be read by all ophthalmologists.

M. H. Post.

Ticho, A. **The trachoma question in Palestine.** Klin. M. f. Augenh., 1930, v. 84, Jan., pp. 56-60.

The number of trachoma patients in Palestine is estimated from 350,000 to 400,000. Thus of the 150,000 Jews perhaps fifteen percent are affected with active trachoma, and at least fifty percent of the 700,000 Arabs. The earliest infection occurred at the age of three months. Thus the children enter school already infected in the family or neighborhood. At school infection occurs rarely. In Ticho's opinion treatment must commence in the family.

C. Zimmermann.

Toulant, P. **Trachoma in the schools of the department of Algiers.** Rev. Internat. du Trachôme, 1929, v. 6, July, pp. 101-106.

In a survey of school children in various sections of Algeria Toulant found trachoma to be widespread and a definite menace both to Algeria and to France, which latter country risks being contaminated by the numerous visitors from the infected areas. The disease was found to vary with race and living conditions. The poor Mussulmans had the highest incidence of infection, next the poor Jews, and then the Maltese, Spanish, Italians, Kabyles, and Arabs in equal proportion. The maximum incidence was found in children between the ages of eight and ten years. Altitude seemed to have a beneficial action in that trachoma was milder and less prevalent in the mountainous regions as compared with the plains, but the relative congestion of the plains people must be considered as a factor in the contagion. The author suggests that the statistical procedures be standardized so that the figures published by the different workers can be as comparable as possible.

Phillips Thygeson.

Weekers, L. **The psychological and physiological fitness of drivers of automobiles.** Arch. d'Opht., 1929, v. 46, Dec., p. 717.

The question of the visual requirements of automobile drivers was taken up by the Thirteenth International Congress of Ophthalmology. The factors to be considered in an automobile driver are physical, psychological, and legal. Psychological factors are of the greatest importance, as emotionalism, fatigue, or anxiety may cause even a physically perfect driver to become dangerous. When a physically unfit driver meets with an accident one cannot say whether the physical unfitness was the cause of it or not. But from a study of statistics it has been definitely shown that the percentage of accidents is diminished when physically and psychologically unfit workers are eliminated from companies which have to do with public transportation. Therefore it should be possible to diminish the number of accidents amongst automobile drivers in general if by some sort of selection the unfit were prevented from driving.

Requirements for various purposes are discussed in great detail. (See also American Journal of Ophthalmology, 1929, January, page 83.)

M. F. Weymann.

Yassky, H. **Some notes on the propaganda against trachoma.** Revue Internat. du Trachôme, 1929, v. 6, Jan., p. 30.

Yassky insists that the education of the public regarding trachoma is impossible without frequent lectures. He recommends the showing of photographs of local persons with normal eyes, eyes in different stages of trachoma, and blind eyes, as most important in driving home the seriousness of the disease. Methods of prevention and care should also be illustrated in this way. *George H. Stine.*

QUESTIONS AND ANSWERS

Edited by Dr. Lawrence T. Post

This new department of the American Journal of Ophthalmology is for the present experimental in character, and its continuance will depend upon the reception accorded it by our readers. Questions on which advice is sought should be addressed to **Dr. Lawrence T. Post,** 524 Metropolitan building, Saint Louis, Missouri; and such questions will be referred by Dr. Post to sources whence appropriate answers are likely to be forthcoming. The reply will be sent to the questioner, and the Journal will publish those questions and answers which appear to be of sufficient general interest to warrant such action. The questioner's name will not be given, but that of the physician answering will be published unless he requests otherwise.

1. Retinal detachment after trephining

Question: I performed an Elliot corneoscleral trephining on the eye of a patient with chronic glaucoma. The operation went smoothly and seemed to have been conducted exactly as desired. After the trephine plug was cut through in its anterior two-thirds the iris presented and a small piece of the iris tissue was excised along with the plug.

Following the operation the eye became rapidly quiet but the anterior chamber did not reform and no bleb appeared over the trephine hole. The patient for a few days said that he could see objects fairly clearly across the room. One week after the operation he said that a cloud had come before his vision. This proved to be an extensive detachment of the retina in the upper outer quadrant. Tension, which before the operation had varied from 40 to 60 mm. for two or three years, with a slowly diminishing field, was now 8 mm. (Schiøtz). It was thought that free use of atropine might cause a return of hypertension and thus be of value in replacing the retina. After four or five days, during which time the anterior chamber finally reformed and a good filtering bleb appeared, the tension again became elevated to 40 mm. No improvement was obtained however regarding the detachment. The unfilled anterior chamber apparently had some association with the detachment, because of the fact that the bleb formed late and yet there was no indication of fistula at the flap.

I failed to find any reference to this mishap in Colonel Elliot's treatise on glaucoma, although choroidal detachment was mentioned as a passing phenomenon. I should like information on the frequency, cause, and treatment of this disaster.

Answer (from Col. R. H. Elliot, London, England): I have not met with any instance of detachment of the retina after trephining, though I have seen several instances of detachment of the choroid. I have found that it practically invariably settles down in time, whatever the patient does. It has not seemed to me that there is the slightest use in making the patient lie up for this particular form of detachment. I have never found it do any good, whilst they get quite well again while still moving about.

On the other hand, I have seen a detachment of the retina occur after a perfectly performed cataract extraction without any apparent reason for it. The only explanation I could give was that the tendency to detachment was strongly present and that the small amount of trauma involved, even in a smooth operation for cataract, was sufficient to determine it. In other words, it is a complication that, in the present state of our knowledge, it is impossible either to foresee or to guard against. I wonder whether the same remark applies to your colleague's case. I am sorry that I cannot help you more.

2. Asteroid hyalitis

Question: I have a patient who has a rather unusual condition and I should like to report it and see if my diagnosis is correct.

The patient is J. F. aged seventy-two years. He has been a patient of my office for the past eight years. On November 18, 1922, he came in for refraction, and my fundus examination showed at the time that he had an old retinitis of both eyes along the nasal vessels in the lower quadrant, beginning about two and one-half disc diameters from the nerve head. The vision with correction at that time was 20/30 in each eye and Jaeger 1.

I did not see him again until March 12, 1930, when he came in to have his lenses changed again, and this time he still got 20/20 vision. My fundus examination showed in the right eye that he had numerous white vitreous opacities which were fixed, and looking at them from the side they appeared to be of a dark hue, but looking at them directly they appeared as the stars in the heavens at night. These had not been present in 1922. The remainder of the fundus was the same as at my previous examination in 1922. The left eye did not have any of these opacities and there was no further change in the fundus.

This man was in perfect health and had never been sick, so there is a question in my mind whether my diagnosis of asteroid hyalitis is right. In referring to my Ball's "Ophthalmology" I find that this is a very rare condition. I should appreciate an answer either direct or through the Journal.

Answer (from Dr. T. B. Holloway, Philadelphia): Concerning the case report you have referred to me, I should regard the diagnosis of asteroid hyalitis as correct. In my opinion the statement referred to as appearing in Ball's "Ophthalmology" is incorrect. Asteroid hyalitis is not a rare condition, the most that could be said would be that it is an unusual condition. Many of these cases, as in days gone by, are still diagnosed as synchysis scintillans, which was originally meant to designate deposits of cholesterin in the vitreous. This last condition, as far as my experience is concerned, is rare, and I believe the careful and systematic routine examinations of these cases are slowly establishing this view. The snow-ball opacities, when in focus, appear as dead white spheres, sometimes tending to be elliptical; but when out of focus they appear as black dots, or suggest the appearance of shadow cells. Inasmuch as they are comparatively a dead white, they do not sparkle or scintillate, but remain white as long as they are in focus. They do not settle to the bottom of the vitreous chamber, but are buoyant, the amount of excursion doubtless depending upon the integrity of the vitreous.

These points can be appreciated if you compare the fall of a piece of slate and a round stone in a fluid, structures that would be comparable to cholesterin and these snow-ball opacities. Some twenty years or so ago there was some discussion as to whether the gold or silver appearance was more common in cases of synchysis scintillans; my own belief is that the silver cases, at least, were snow-ball opacities and that their true character was not recognized. If your correspondent refers to the Transactions of the American Ophthalmological Society 1917 and 1929, he will find sufficient references to cover the subject.

3. Tissue changes after muscle tucking

Question: I am interested in finding out whether sections have been made through tendon tucks which have been inserted a long time (six months or more), in order to determine the exact nature of the final process; whether adhesions between the muscle bands take place or whether adhesions form to the globe and what happens to the muscle included in the tuck.

Answer (from Dr. Allen Greenwood, Boston): I know of no microscopic sections that have been made through muscles that have been tucked or ad-

vanced with reference to the exact nature of the final process. I have on one occasion had to catch up a muscle that had been tucked and the tuck fastened down forward, and I found that the strabismus hook could be freely inserted under the muscle and up to the normal place of attachment. From the appearance of the conjunctiva a year after a tucking where the tuck has been fastened down forward to the sclera, nothing can be seen under the conjunctiva that is at all suggestive of muscle tissue. I am under the impression that the tucked portion of the muscle tissue in front of the normal attachment becomes entirely absorbed, leaving a whitish, shiny, fibrous material which can be seen incorporated with the conjunctiva and apparently with the sclera. I am very sorry that I cannot give you microscopic sections to prove the microscopic appearances.

4. Causes of halos

Question: What conditions besides glaucoma could cause the rainbows in the following patient? A man, about thirty-five years, whose eyes are negative to objective examinations, whose vision is 6/4 O.U., whose general health is good, and who has no apparent foci of infection, has been seeing rainbows about artificial lights for two years. At times they are much more distinct that at others, but never absent. His visual acuity taken immediately after seeing the rainbows is 6/4 O.U., and there is no steaming of the cornea, no cloudiness of the other media nor rise in tension. Perimetric studies not made.

Answer (from Dr. E. C. Ellett, Memphis): The symptom of rainbows, or halos, is supposed to be caused by any opacity of the media. In glaucoma it is usually ascribed to edema of the cornea, but any opacity of the cornea or lens, or a mucous secretion on the cornea, can cause the symptom. It is said that lens opacities too delicate to be detected by the observer can cause this symptom. According to Elliot the halos can be seen by anyone around a light when the attention is once called to it, and Elliot speaks of it as a physiological thing. In people who are nervous, or who know something of the significance of this symptom in glaucoma, it is apt to be noticed and to cause anxiety. If opacity of the media and rise of tension could be eliminated, the patient might be reassured and possibly would cease to see or at least to complain of the symptom.

NEWS ITEMS

News items in this issue were received from Drs. A. G. Bennett, Buffalo; M. N. Beigelman, Los Angeles; Hilding Berglund, Minneapolis; F. P. Calhoun, Atlanta; C. A. Clapp, Baltimore; Beulah Cushman, Chicago; Walter F. Hoffman, Seattle; M. Paul Motto, Cleveland; J. M. Patton, Omaha; and G. Oram Ring, Philadelphia. News items should reach **Dr. Melville Black,** Metropolitan building, Denver, by the twelfth of the month.

Deaths

Dr. Frank C. Kleckner, Buffalo, aged fifty-two years, died April twenty-sixth.

Dr. John Scott Wood, Brooklyn, aged sixty-six years, died April third of heart disease.

Dr. Louie Ethelyn V. Stegman, Battle Creek, Michigan, aged fifty-one years, died March twenty-third, at the White Memorial Hospital, Los Angeles, of carcinoma.

Giles Christopher Savage of Nashville died April eighth; one of the unique figures in American ophthalmology, one of the Southland's orators, a dominating personality.

Professor Leonid Bellarmenev, Leningrad, Russia, died March nineteenth.

Miscellaneous

By the will of the late William H. Nichols, the Brooklyn Eye and Ear Hospital was left $25,000.

Under the will of the late Dr. John Edward L. Davis, the New York Ophthalmic Hospital was left $250,000 and will receive $50,000 more upon the death of his widow.

The Lighthouse Clinic for the Prevention of Blindness has been established at 114 East Sixtieth Street, New York City, by the New York Association for the Blind. This clinic will be open in the evening for patients who find it difficult to attend in the daytime. It will cooperate with other eye clinics, but will concentrate on the prevention of blindness.

The British Journal of Ophthalmology (April) quotes as follows from a reference to eclipse blindness in the language which Plato put into the mouth of Socrates in the Phædo (Jowett's translation, 1871): "I thought that, as I had failed in the contemplation of true existence, I ought to be careful that I did not lose the eye of my soul; as people may injure their bodily eye by observing and gazing on the sun during an eclipse, unless they take the precaution of only looking at the image reflected in the water, or in some similar medium".

Prospective candidates for the certificate of the American Board for Ophthalmic Examinations are again reminded that examinations will be conducted by the Board at Detroit and Chicago in connection, respectively, with the meetings of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology, in July and October of this year. The secretary of the Board is Dr. William H. Wilder, 122 South Michigan Boulevard, Chicago.

The eighth annual summer graduate course and the summer congress of the Colorado Ophthalmological and Colorado Otolaryngological societies will be held in Denver this year from July twenty-ninth to August ninth inclusive. In addition to the usual demonstrations and clinics, and the daily luncheons with their round table discussions, special courses will be given by Dr. Jonas Friedenwald, Dr. J. F. Barnhill, Dr. L. W. Dean, Dr. Alfred Cowan, Dr. Lewis Fisher and others. The secretary of the graduate course is Dr. William M. Bane, Republic building, Denver, and the corresponding secretary-treasurer, to whom checks and requests for hotel and other accommodations should be sent, is Dr. H. L. Whitaker, Republic building, Denver.

The fifteenth annual report of the National Society for the Prevention of Blindness includes a tribute to the memory of the late chief justice William Howard Taft, who was honorary president of the society for the past fifteen years. A discussion of the preservation of the eyesight of children traces the subject through the general health of the expectant mother into the successive stages of the child's life. An increase of forty-five in the number of sight-saving classes during the past year is noted. There are now 350 of these classes in ninety-five cities of twenty-one states. The society estimates, however, that approximately five thousand such classes are needed in the United States. To train teachers for this work, special courses will be given in the coming summer at Columbia University, University of Chicago, University of Cincinnati, and the State Teachers' College in Buffalo, New York.

Dr. Ida Mann, of London, England, will give courses of lectures on embryology in Denver and in Chicago, beginning at the former city on September 29 and at the latter city on October 14, 1930. The course of lectures in Chicago will consist of six two-hour lectures under the general title of "The phylogeny and ontogeny of the human eye". The details covered in these lectures will include a study of light reactions in unicellular organisms; the eyes of invertebrates; simple and compound eyes; derivation of the vertebrate from the invertebrate eye; stages in vertebrate embryology; ocular characteristics of fish and amphibia, reptiles, birds, and the lower mammals; the eye in human embryos at different stages; development of the individual structures of the human eye; and the development of the commoner congenital anomalies found in man.

According to a bulletin circulated by the National Society for the Prevention of Blindness, the International Educational Cine-

matographic Institute of the League of Nations is undertaking an exhaustive study of the effects that motion pictures may produce on the eyesight of children and young people, in view of the widespread use of the cinema throughout the world now, and its additional possibilities for visual education with the introduction of talking pictures.

The study will seek to determine whether any disturbances of sight are provoked by watching a brilliantly lighted screen in otherwise absolute darkness, the maximum time that a show can last before producing visual fatigue, and answers to other problems which may influence the use of motion pictures for juvenile education.

The University of Minnesota announces a new departure in postgraduate study, in that two weeks of attendance at a special university course are to be devoted to a symposium on the kidney in health and disease. During the period from July 7 to 18, 1930, the university medical school will conduct a "symposium" on this subject, including clinical lectures, clinics on kidney disease, study classes and lectures on the physiology and pathology of the kidney, and round table discussions every second day for correlation of the material presented during the preceding days. In addition to the staff of the university medical school, the program will be supported by Dr. A. J. Carlson of the University of Chicago, Dr. E. K. Marshall of Johns Hopkins Medical School, Professor F. Volhard of Frankfort-on-the-Main, Dr. A. N. Richards of the University of Pennsylvania, Dr. H. L. White of Washington University (Saint Louis), Dr. Paul B. Rehberg of the University of Copenhagen, Dr. Warfield T. Longcope of Johns Hopkins Hospital, and Dr. L. Leiter of the University of Chicago. Dr. Frank Burch, professor of ophthalmology in the University of Minnesota, will conduct an evening round-table discussion on the eye changes in the different forms of kidney involvement, and Dr. H. P. Wagener of the Mayo Clinic will discuss the retinal changes in Bright's disease and in hypertension. The annual meeting of the Minnesota State Medical Association will be held in Duluth at the beginning of the second week of the course.

Personals

Dr. Grady E. Clay, Atlanta, Georgia, has returned to his office after several months' absence.

Dr. William O. Martin, Atlanta, Georgia, and Miss Gertrude Harris were married on April twenty-sixth.

Dr. and Mrs. J. Frank Crouch, Baltimore, have sailed for Germany.

Dr. Harry Friedenwald, Baltimore, sails on June twelfth to attend the Oxford Congress.

Dr. Manford Waltz of Seattle has been quite ill for the past month, but is back at his office again.

Dr. A. E. Bulson, Jr., of Fort Wayne, Indiana, lately returned from a visit to Japan.

Dr. Aaron Barlow was recently appointed ophthalmic surgeon to the Mount Sinai Hospital, Philadelphia.

Dr. W. E. Bruner of Cleveland is home from a six weeks' holiday at Sarasota, Florida.

Dr. William E. Gamble has been elected emeritus professor of ophthalmology of the School of Medicine of the University of Illinois.

Dr. George E. de Schweinitz, Philadelphia, has recently returned from attending the jubilee meeting of the Ophthalmological Society of the United Kingdom.

Dr. William Alfred Mann, Jr., of Chicago, was a recent visitor in Iowa City, Omaha, and Minneapolis. Dr. Mann is associated with the ophthalmological department of Northwestern University.

At the April meeting of the Omaha and Council Bluffs Ophthalmological and Otolaryngological Society, Dr. George B. Potter was elected president, Dr. W. P. Haney vice president, and Dr. Calvin Davis secretary.

Dr. H. B. Young of Burlington, Iowa, paid the editor a visit in Denver in the latter part of April, on his way back from a seven weeks' trip to Samoa and Honolulu. Dr. Young celebrated his seventy-ninth birthday during his stay in Samoa, and was honored by a special native dance party in a Samoan village.

Personals

Professor Axenfeld of Freiburg, editor of the Klinische Monatsblätter für Augenheilkunde, was elected an honorary member of the Egyptian Ophthalmological Society during his recent visit to Egypt. Professor Axenfeld was also recently elected a corresponding member of the International Medical Club of New York.

On the evening of April sixth the Doctors' Building on Peachtree Street, Atlanta, which housed fifty-six doctors, was completely destroyed by fire. The doctors' entire equipment was lost and only the records were saved. Among the occupants were the oculists Drs. F. Phinizy Calhoun and Dr. Z. W. Jackson. Drs. Calhoun and Jackson announce the removal of their offices to 131 Forrest Avenue, Atlanta.

Dr. George E. de Schweinitz, professor of ophthalmology in the University of Pennsylvania Graduate School of Medicine, has been awarded the Leslie Dana Medal for 1930 for prevention of blindness. The medal has been given each year since 1925 to a person who has performed outstanding work in the prevention of blindness and the conservation of vision. The Saint Louis Society for the Blind is trustee for the medal fund.

Societies

Readers are again reminded that the British Medical Association will meet at Winnipeg, Canada, on August 26 to 29, the president of the Association this year being an ophthalmologist, W. Harvey Smith of Winnipeg, while the president of the ophthalmic section is N. Bishop Harman of London, England.

At the March meeting of the Ophthalmological and Otolaryngological Section of the Cleveland Academy of Medicine, Dr. Marvin Jones, professor of otolaryngology of the New York Postgraduate Medical School and Hospital, read a paper on "Cases with disease of the maxillary sinus in which lipiodol has been used".

The regular dinner meeting of the Cleveland Ophthalmological Club was held on April fifteenth, with Dr. Martin Cohen, professor of ophthalmology and director of the ophthalmological department of the New York Postgraduate Medical School and Hospital as guest of honor. In his address Dr. Cohen covered the field of syphilitic affections of the eye.

Special appointments at Washington University

Dr. Harvey J. Howard, professor of ophthalmology at Washington University, Saint Louis, has announced the following appointments to the department of ophthalmology:

(1) Dr. George H. Bishop as professor of applied physiology in ophthalmology. Dr. Bishop has for seven years held the position of associate professor of physiology in the school of medicine at Washington University. He had his undergraduate work at the University of Michigan and obtained his Ph.D. at the University of Wisconsin in 1920 in cell physiology, cytology, and zoology. He has worked on insect physiology and metabolism, and on nerve and muscle physiology with Gasser and Erlanger, using the cathode-ray oscillograph. One of the first things that Dr. Bishop will do will be to apply this instrument and technique to the study of the nervous mechanism of the eye in accommodation to light of different intensities, and to determine the relation between eye function and the sympathetic nervous system of other parts of the body.

(2) Dr. James A. Hawkins as associate professor of applied biochemistry in ophthalmology. Dr. Hawkins has spent the past eight years at the Rockefeller Institute and Hospital, the first four with Dr. James B. Murphy in the institute, working on the blood chemistry of small animals and on the metabolism of normal and malignant tissues, using the Warburg technique; the last four years with Dr. D. D. Van Slyke in the hospital, working on the development of chemical methods and on the physicochemical properties of the blood. He is now acting head of the department of chemistry in the hospital of the Rockefeller Institute during the sabbatical leave of absence of Dr. Van Slyke in Europe. Dr. Hawkins took his A.B. degree at Amherst, his Ph.D. at the University of Edinburgh in 1922, and his Sc.D. in 1928 from the same institution. He is a biophysicist and physical chemist who has devoted most of his time to biochemical problems. He will first have charge of the chemical phases of the trachoma investigations that are being undertaken in the department of ophthalmology of Washington University, and will later undertake to determine the chemical variations from the normal that exist in the different structures of the eye in degenerative diseases of that organ.

(3) Dr. Louis A. Julianelle as associate professor of applied bacteriology and immunology in ophthalmology. Dr. Julianelle received his A.B. and his M.S. from Yale, and his Ph.D. from the University of Pennsylvania in 1922, majoring in bacteriology and immunology. After two years of service as assistant bacteriologist to the Philadelphia General Hospital, he went to the Rockefeller Institute, where he has worked under Dr. O. T. Avery for the past six years. His principal contributions are concerned with the grouping of the Friedländer bacillus and with sensitization to the pneumoccocus. Dr. Julianelle will begin his work at the Oscar Johnson Institute in Washington University on October 1, 1930. He will first study the mechanism of mucous membrane infections, in the attempt to establish a base line from which to attack certain outstanding problems in the investigation of trachoma and allied diseases.

(4) Dr. R. Wendell Harrison as instructor in applied bacteriology and immunology in ophthalmology. Dr. Harrison did his undergraduate work at the Southern Methodist University at Dallas, Texas, and was engaged for the following six years in teaching bacteriology at that institution. He received his M.S. from the University of Chicago in 1925. In June, 1930, he expects to receive his Ph.D. in bacteriology at the University of Chicago. For the past two years Dr. Harrison has been working with Dr. Falk in the investigation of the etiology of influenza.

(5) Mr. Garvey Bowers as research assistant in applied bacteriology in ophthalmology. He received his B.S. and M.A. from the University of Kansas.